* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] The image display device characterized by having the gradation control means which makes the gradation of one [at least] image change in the image display device which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on the background image concerned, and which can be color-printed based on the gradation of each image so that a gradation difference may arise among both the gradation concerned when the gradation of said character image is the same as the gradation of said background image.
[Claim 2] Said gradation control means is an image display device according to claim 1 characterized by making the gradation of said character image change into the gradation which expresses a dark color more relatively than said background image.
[Claim 3] Said gradation control means is an image display device according to claim 1 or 2 characterized by making the gradation of said character image change into the gradation expressing ******.
[Claim 4] Electronic equipment characterized by having the image display device of claim 1 thru/or either of 3, and the printing means which can color-print the display result of the image display device concerned.
[Claim 5] The image display approach characterized by making both the gradation concerned different and displaying said character image and said background image in the image display approach which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on the background image concerned, and which can be color-printed based on the gradation of each image when the gradation of said character image is the same as the gradation of said background image.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the image display approach in for example, a tape airline printer, a word processor (word processor), etc. at the electronic equipment list equipped with the image display device which carries out the monochrome display of the image which can be color-printed, and its equipment.
[0002]
[Description of the Prior Art] Conventionally, by the electronic equipment in which this kind of color printing is possible, the monochrome liquid crystal display is used abundantly from the request of the low price of a device at that image display device. When the image which can be color-printed is displayed on this monochrome liquid crystal display, that image is displayed in white, black, or gray in the meantime based on gradation (lightness). That is, an image is displayed in the gray near black or black, when gradation is a value expressing a dark color, while being displayed in the gray near white or white, when the gradation is a value expressing light color.
[0003]
[Problem(s) to be Solved by the Invention] Thus, when the image which can be color-printed is displayed on a monochrome liquid crystal display, are concerned, and the image is not in color data in three primary colors (red, green, blue), and is displayed only based on gradation. For this reason, even if the color data of the image (character image) of a character compared and inputted differ from the color data of the image (background image) of the background of that image, when the gradation of both images is the same, a character image and a background image will be displayed in the same color (shade). Therefore, since the character image in a monochrome liquid crystal display is displayed in the condition of having been buried in the background image, it becomes difficult [the discernment] very [it].
[0004] This invention is made in order to solve the above technical problems, and even if it is the case where the monochrome display of the image which can be color-printed is carried out, it aims at providing with the image display approach the electronic equipment list equipped with the image display device which can identify a character image and a background image ease and clearly, and its equipment.
[0005]
[Means for Solving the Problem] In the image display device which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on a background image, and which can be color-printed based on the gradation of each image, when the gradation of a character image is the same as the gradation of a background image, the image display device concerning this invention is characterized by having the gradation control means which makes the gradation of one [at least] image change so that a gradation difference may arise among both gradation.
[0006] In the image display approach which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on a background image, and which can be color-printed based on the gradation of each

image, when the gradation of a character image is the same as the gradation of a background image, the image display approach concerning this invention makes both gradation different, and is characterized by displaying a character image and a background image. .

[0007] Since the gradation of both images is made according to the above configuration to change so that a gradation difference may arise when carrying out the monochrome display of the character image and background image of the same gradation, the shades of those images are made to be able to differ and it can be made to display. For this reason, even if it displays a character image in piles on a background image, a character image is clearly [easily and] discriminable to a background image.

[0008] In this case, as for a gradation control means, it is desirable to make it change into the gradation which expresses a dark color for the gradation of a character image more relatively than a background image.

[0009] According to this configuration, since a character image is displayed in a dark color more relatively than a background image, a character image can be floated up to a background image, and it can identify still more clearly.

[0010] Moreover, it is desirable to make a gradation control means change into the gradation which expresses ****** for the gradation of a character image in this case.

[0011] Since a character image is displayed by ******, when according to this configuration a display with 3 or more gradation is possible for an image and a background image has a pattern, for example, the pattern of a background image can be displayed with 2 or more gradation except the gradation expressing ******. Therefore, while making a character image identifiable still more clearly to a background image, the pattern of a background image is also clearly discriminable.

[0012] The electronic equipment concerning this invention is characterized by having the image display device of claim 1 thru/or either of 3, and the printing means which can color-print the display result of an image display device.

[0013] Since according to this configuration it can print when the image (a character image and background image) displayed on an image display device has been grasped clearly, the input of a character etc. and the activity from edit to printing can be done ease and quickly.

[0014]

[Embodiment of the Invention] The case where the image display approach is applied to a tape airline printer is explained to the electronic equipment list hereafter equipped with the image display device concerning 1 operation gestalt of this invention, and its equipment with reference to the accompanying drawing. As shown in drawing 1 , the tape airline printer 1 color-prints the character of the request which keyed etc. by the ink jet method on Tape T, cuts the printing part of this tape T, and creates a label.

[0015] The tape airline printer 1 is equipped with the body 2 of equipment, the keyboard 3 which performs an input, edit, etc. of a character, the tape cartridge 4 which held the tape T which is print media, and the ink cartridge 5 (refer to drawing 2) filled up with the ink of four colors, and it is equipped with the tape cartridge 4 and the ink cartridge 5 free [attachment and detachment] to the body 2 of equipment.

[0016] The closing motion lid 7 to form the outer shell in the equipment case 6, and for the body 2 of equipment detach and attach a tape cartridge 4 and an ink cartridge 5 in the upper part of the equipment case 6 is formed widely. The scuttle 9 corresponding to the image display section 8 built in the body 2 of equipment is formed in the upper right portion by the side of before this closing motion lid 7 (keyboard 3 side), and transparence panel 9a is attached to this scuttle 9. Moreover, the tape exhaust port 10 of the shape of a slit for discharging Tape T outside is formed in the side face of the equipment case 6.

[0017] As shown in drawing 2 , the circuit board 14 grade which controls the tape cartridge 4 which wound and held Tape T, the tape-feed section 11 which sends out Tape T to the exterior of the body 2 of equipment, the printing section 12 which color-prints a printing image, the cutting section 13 which cuts Tape T, and each part of the tape airline printer 1 is carried in the interior of the equipment case 6.

[0018] The tape cartridge 4 is equipped with the printing tape T1 on which a printing image is printed, and the lamination tape T2 stuck on the printing part of this printing tape T1 from a top.

These printing tapes T1 and the lamination tape T2 are wound around printing tape hold section 4a and lamination tape hold section 4b which were arranged in right-and-left both sides on both sides of the printing section 12, respectively, and are held in them. The printing tape T1 consists of an adhesive layer with which the rear face of a base material tape and this base material tape was plastered, and a releasing paper tape stuck on the adhesive layer. On the other hand, the lamination tape T2 consists of a base material tape which consists of a transparent film, and an adhesive layer with which the rear face of this base material tape was plastered. The base material tape of this lamination tape T2 is mostly formed in the same width of face with the printing tape T1, and in the case of printing, as it arranges crosswise both ends, it is stuck on the printing tape T1.

[0019] The printing section 12 is equipped with the carriage 22 which carried the ink cartridge 5 with which it equipped free [attachment and detachment] at the print head 121, and the print head 121 and an ink cartridge 5 through the cartridge holder 21 which prepared many ink nozzles (not shown) in this print head [which carried out alignment arrangement] 121, and print head 121 bottom at the tip, and the cartridge holder 21. The ink cartridge 5 is equipped with ink tank 5a with which the ink of four colors of yellow, cyanogen, a Magenta, and black was filled up. If the print head 121 is equipped with this ink cartridge 5, ink tank 5a of each color of an ink cartridge 5 will be open for free passage to the print head 121, and the supply of ink of it will be attained.

[0020] Carriage 22 is attached in the carriage guide shaft 23 prolonged crosswise [of the printing tape T1] free [a slide], and reciprocates to a longitudinal direction (cross direction of the printing tape T1) through the timing belt outside drawing by the forward reverse drive of the carriage motor (CR motor) 122 (refer to drawing 5). Moreover, if the gobo outside drawing protrudes on carriage 22 and this gobo attends the location detection sensor 98 (R> drawing 5 5 reference) which consists of a photo interrupter etc., it will detect that the print head 121 is in a home location (not shown), and location amendment of zero setting etc. will be performed. That is, since this home location is a criteria location in the case of printing while being a position in readiness of the print head 121, when only the predetermined number of steps rotates the CR motor 122 from this criteria location, desired color printing is performed on the front face of the printing tape T1 by moving carriage 22 with a precision sufficient in each location of the cross direction of the printing range of the printing tape T1, and making the print head 121 drive synchronizing with this.

[0021] Moreover, the discernment plate (not shown) in which the identification information by a bit pattern etc. is shown is prepared, and gets down to a tape cartridge 4, and when the discernment sensor 99 (refer to drawing 5) carried in carriage 22 attends the above-mentioned discernment plate, the printing starting position to the classification of Tape T and the printing tape T1 of the tape T etc. is detected.

[0022] The print head 121 of the tape-feed section 11 was pinched, and it is equipped with printing tape side delivery device 11a prepared in the upstream and the downstream of a feed direction, respectively, and lamination tape side delivery device 11b. Printing tape side delivery device 11a is equipped with the delivery roller 41 which comes to arrange the delivery follower roller 42 and the delivery driving roller 43 up and down, and the tape-feed motor (PF motor) 111 (refer to drawing 5) which carries out the rotation drive of the delivery driving roller 43.

[0023] The delivery driving roller 43 is formed in the body 2 of equipment, and the delivery follower roller 42 is formed in the tape cartridge 4. If the body 2 of equipment is equipped with a tape cartridge 4, as the delivery follower roller 42 puts the printing tape T1 between the delivery driving rollers 43, it will press this. And the printing tape T1 put between the delivery follower roller 42 and the delivery driving roller 43 is sent to them by rotating the tape-feed motor 111 in this condition.

[0024] On the other hand, lamination tape side delivery device 11b is equipped with the lamination roller 44 which comes to arrange the lamination follower roller 45 and the lamination driving roller 46 up and down, and the lamination motor outside drawing which carries out the rotation drive of the lamination driving roller 46. In addition, this lamination motor and the above-mentioned tape-feed motor are the same (PF motor 111), power branches through the speed reducing gear train outside drawing, and the delivery roller 41 and the lamination roller 44 are

operated, respectively.
[0025] The lamination driving roller 46 and the lamination follower roller 45 are formed in the body 2 of equipment, and the tape cartridge 4, respectively like the above-mentioned delivery driving roller 43 and the delivery follower roller 42. If the body 2 of equipment is equipped with a tape cartridge 4, as the lamination follower roller 45 puts the printing tape T1 and the lamination tape T2 between the lamination driving rollers 46, it will press these. and . When a lamination motor rotates in this condition, the printing tape T1 and the lamination tape T2 which were put between the lamination follower roller 45 and the lamination driving roller 46 are sent to them, sticking.
[0026] The cutting section 13 is constituted by the cutter motor 131 (refer to drawing 5) which carries out cutting actuation of a cutter 51 and it. After the completion of printing, Tape T stops, after the step feed only of the predetermined distance is carried out by the PF motor 111. A cutter motor 131 drives immediately after that, and the printing part of Tape T is cut.
[0027] The keyboard 3 is attached free [****] to the body 2 of equipment. For this reason, in changing into the condition of having pulled down the keyboard 3 when the tape airline printer 1 was used (refer to drawing 1), and carrying the tape airline printer 1 or containing, it changes into the condition of having caused the keyboard 3. Thus, since the whole equipment becomes compact in case it carries or contains, the tape airline printer 1 is the thing excellent in portability and storability.
[0028] Drawing 3 is the key plot plan of a keyboard 3. As shown in this drawing, many the character keys 310 and these character keys 310 for inputting characters, such as an alphabetic character and a notation, into a keyboard 3 are pinched, and two or more of the function keys 320,320 are formed up and down, respectively. Each key of the character key 310 is formed in circular convex, and a hiragana, the alphabet, the figure, or the notation is indicated by the front face and bottom (drawing 3 indicates a part). On the other hand, the key of most function keys 320,320 of vertical both sides is formed in rectangle convex, and the function of each key etc. is indicated by the front face and bottom (drawing 3 indicates a part).
[0029] The upper function key 320 is equipped with the key for making the operation mode of the tape airline printer 1 mainly change to various kinds of edit modes. therefore, the thing to do for the depression of these keys — for example, the operation mode can be made to change to the alphabetic character color edit mode for setting up the background edit mode for setting up the background of the inputted image of a character, or the alphabetic character color of a character image etc. In addition, the printing key 321 for ordering it printing actuation is arranged in the left end.
[0030] On the other hand, the lower function key 320 carries out kanji conversion, when the operation mode is input mode, and when it is the edit mode, it is equipped with the key for specifying a desired thing out of alternative. In following, for example, carrying out kanji conversion of the input character, the conversion key 326, a cursor key 327, and the selection key 328 are operated suitably, and it performs them. In addition, Shift-key 324 is for making the function which inputted the alphabetic character indicated by the character key 310 bottom, or was indicated by the function key 320 bottom perform by carrying out a depression to the character key 310, other function keys 320, and coincidence. Moreover, a sign 325 is the power-source key of the tape airline printer 1.
[0031] Drawing 4 is the expansion top view showing the image display section 8. The image display section 8 is equipped with the display screen 81 which displays the inputted image of a character. This display screen 81 consists of monochrome liquid crystal displays, and is constituted by the liquid crystal display section 82 which displays said two or more indicators 85 mentioned later, such as an image, with liquid crystal, and the mode written section 83 which indicated beforehand the semantics which it is prepared in the perimeter of the liquid crystal display section 82, and each indicator 85 shows. In the liquid crystal display section 82, the image image (printing image) at the time of printing its image besides a character image, the menu at the time of image edit, alternative, etc. are displayed on the display 84 which occupies the most. Moreover, in this liquid crystal display section 82, when displaying a printing image, that image can be displayed with 4 gradation (4 gradation displays).

[0032] By the tape airline printer 1, it is an input state (a Roman alphabet input) from a keyboard 3. The typeface of the character image at the time of printings, such as a kana input, (a Mincho typeface, block letter, etc.), the background (a solid color color —) of printing styles (columnar writing, fixed-length printing, etc.) and a character image an ornament etc. — etc. (henceforth a "mode style") etc. — it indicates what kind of mode style set up at the time of use by making an indicator 85 turn on about a setup. When the indicator 85 which follows, for example, is located directly under a "Roman alphabet" when an input state is a Roman alphabet input lights up and the block letter is specified as the typeface of a character image, the indicator 85 located directly under a "block letter" lights up.

[0033] Next, with reference to drawing 5 , the fundamental configuration of the control system in the tape airline printer 1 is explained. The control section 200 by which control of the tape airline printer 1 was carried in the above-mentioned circuit board 14 based on the input signal from a keyboard 3, the location detection sensor 98, and the discernment sensor 99 is controlling the printing section 12, the tape-feed section 11, the cutting section 13, and the image display section 8 through the drive circuit section 280 to be shown in this drawing.

[0034] A control section 200 is equipped with CPU210, ROM220, character generators ROM (CG-ROM)230 and RAM240, the input interface 250, and the output interface 260, and these are mutually connected by the bus 270.

[0035] ROM220 has memorized the others and color translation table 221 which is the control program processed by CPU210, the character decoration table 222, etc. CG-ROM230 has memorized the font data of the character of the alphabetic character currently prepared for the tape airline printer 1, a notation, a graphic form, etc., and when the code data which specify a character are given, it outputs font data.

[0036] RAM240 has fields, such as the text memory 242 which memorizes the text data of a character inputted from the various register groups 241 and a keyboard 3, the display-image data memory 243 which memorizes the display-image data of a display screen 81, and the printing image data memory 244 which memorizes printing image data, and is used as a working area for control processing. In addition, even if a power source is turned OFF, RAM240 receives supply of a power source by the backup circuit (not shown) so that the memorized data may be held.

[0037] The input interface 250 is a circuit for connecting with a keyboard 3, the location detection sensor 98, and discernment sensor 99 grade, and incorporating the location detecting signal from the various commands and input data from a keyboard 3, and the location detection sensor 98, the identification information signal from the discernment sensor 99, etc. into a bus 270. Moreover, the output interface 260 is a circuit for outputting data and the control signal which were outputted to the bus 270 from the CPU210 grade to the drive circuit section 280.

[0038] As for the location detection sensor 98, the print head 121 detects the classification and the printing starting position of a tape cartridge 4 or Tape T by detecting having arrived at the home location, and the discernment sensor 99 inputs each detecting signal into a control section 200.

[0039] Moreover, the drive circuit section 280 is constituted by the head drive circuit 281, the motorised circuit 282, and the liquid crystal drive circuit 283. The head drive circuit 281 drives the print head 121 of the printing section 12 according to the control signal outputted from a control section 200. Similarly, the motorised circuit 282 drives the CR motor 122 of the printing section 12, the PF motor 111 of the tape-feed section 11, and the cutter motor 131 of the cutting section 13 according to directions of a control section 200. Similarly, the liquid crystal drive circuit 283 controls the image display section 8 according to directions of a control section 200.

[0040] Thus, in the constituted control system, according to the control program in ROM220, CPU210 of a control section 200 inputs the location detecting signal from the various commands from a keyboard 3, various data, and the location detection sensor 98, the identification-information signal from the discernment sensor 99, etc. through the input interface 250, processes the font data from CG-ROM230, the various data in RAM240, etc., and is outputting the control signal to the drive circuit section 280 through the output interface 260. Thereby,

while performing printing control, the display control of the display screen 81, etc., the print head 121 is controlled and the tape airline printer 1 whole is controlled, such as color-printing on Tape T on predetermined printing conditions.

[0041] The actuation from which the image display approach serves as that description, showing operating procedure until the image display section 8, the control section 200, and the keyboard 3 mainly realize and it creates a label below with reference to drawing 6 - drawing 14 is explained to the electronic equipment list which was equipped with the image display device of this invention, and its equipment in the case of this tape airline printer 1.

[0042] First, if a power source is turned ON and the tape airline printer 1 is started, the image of a condition just before turning OFF the power source at the time of the last starting will be displayed on the display screen 81. That is, in this tape airline printer 1, even if a power source is turned OFF, in addition to various setup which the user registered, the data of the last image are memorized by RAM240 with that edit data (the data of a mode style are also included), and the image based on the data and edit data of that image is displayed on the display screen 81 immediately after starting. In addition, when eliminating all images inputted at the time of the last starting, such as a character, turning OFF the power source or using the tape airline printer 1 for the first time, as shown in drawing 6 R> 6, only the head-of-the-sentence mark (mark by which the line number was square and was surrounded) which shows the line at the time of printing is displayed on the display 84 of the display screen 81.

[0043] Here, when only the head-of-the-sentence mark shown in drawing 6 is displayed, the strings of characters of "handling cautions" are inputted, various edits are performed to these strings of characters, and order is explained later on about until it prints after that and creates a label.

[0044] Drawing 7 is drawing showing the display 84 immediately after inputting the strings of characters of "handling cautions." If the strings of characters of "handling cautions" are inputted as shown in this drawing, in addition to the strings of characters of "handling cautions", the printing image of "handling cautions" and the die length (henceforth "tape length") of the label will be displayed on a display 84 by the Johan section.

[0045] The data of the strings of characters of "handling cautions" are developed by RAM240 for a printing image, and this printing image is displayed on the display 84 by outputting that control signal to the liquid crystal drive circuit 283. On the other hand, tape length is calculated based on the character size of each character of "handling cautions", the number of characters, and the distance between characters, and the value which added the order margin to the value is displayed. In addition, in the tape airline printer 1, in order to create the label of fixed die length, (fixed-length printing) and a user can set up that die length now themselves, and that set-up die length is displayed as tape length in this case.

[0046] Although it is also possible to print as it is and to create a label, of course after inputting the strings of characters of "handling cautions" as mentioned above, in the tape airline printer 1, it is possible to perform various edits to the inputted character, and, thereby, the rich label of power of expression can be created. So, below, the case where the background and alphabetic character color of a character are set up is explained as an example of edit.

[0047] If the predetermined function key 320 for the operation mode to set up a background in the condition (to refer to drawing 7) of being input mode is operated suitably, the operation mode will change from input mode to the background edit mode, a display 84 will change to the edit display of a background, and the various backgrounds (the background which has a pattern is hereafter called "ornament background") shown in drawing 8 will be displayed. That is, based on the command of the background edit from a keyboard 3, CPU210 reads various ornament backgrounds from ROM220, and these are displayed on the display 84 of the display screen 81 through the liquid crystal drive circuit 283.

[0048] As shown in drawing 8 , the title ("ornament background" in this case) of background edit is displayed on the upper part of a display 84, and the ornament background of selectable plurality (in the case of this operation gestalt, it is three to one screen) is displayed on it by that bottom. Specifically, the image image of an ornament background is displayed on a right half part by the left half part of a display 84 with the serial number to which the name (background name)

was beforehand assigned by each ornament background. In addition, this serial number is for closing a user's selection based on the list of the ornament backgrounds which were offered beforehand and color-printed, if .

[0049] As shown in drawing 8 , by the edit display of a background, one of the background names is displayed in white (drawing 8 "KARAKUSA"), and it is shown that the background is set up at the time of the last starting. Here, after operating a cursor key 327 suitably and doubling cursor (tone reversal) with the background name of a desired ornament background, the depression of the selection key 328 is carried out. Thereby, a desired ornament background is set up as a background of the strings of characters of "handling cautions." In addition, if the depression of the cursor key 327 of an arrow down ("**") is carried out further, an ornament background and a background name will scroll up one by one, and the ornament background and background name outside drawing will be displayed on a display 84 in the place which doubled cursor with "flower GARA."

[0050] Suppose that the ornament background (background name: warning) shown in drawing 9 was set up in edit of this background. In addition, if color-printed, the whole is yellow, left end Mark Misumi will have the white "!" mark in black and its Mark Misumi, and the ornament background of this "warning" will be printed.

[0051] If a setup of a background is completed, the operation mode will change from the background edit mode to input mode again, and a display 84 will change to the screen shown in drawing 10 . That is, the printing image of the ornament background of "warning" set up above is displayed on the Johan section of the display 84 as which the printing image is displayed in piles as the background with the printing image of the strings of characters of "handling cautions." Moreover, a background name is displayed on the left end of the Johan section of a display 84 with tape length. In addition, the indicator 85 (from the left of the drawing 4 top to the 2nd) in which it is shown that the ornament background is set up in this case lights up.

[0052] In a display 84, as for the printing image of the strings of characters of "handling cautions", and the printing image of the ornament background of "warning", the shade is displayed by each based on the gradation of color data among each data for printing. That is, since the display 84 consists of monochrome liquid crystal displays, the image of a printing image is displayed in the gray near black or black, when gradation is a value expressing a dark color, while being displayed in the gray near white or white, when the above-mentioned gradation is a value expressing light color. Therefore, the gradation of the data for printing of the strings of characters of "handling cautions" and the ornament background of "warning" is temporarily the same. And though the alphabetic character color of the strings of characters of "handling cautions" when comparing and color-printing and the color (background color) of the ornament background of "warning" are different in displaying a duplex-printing image on a display 84 with the gradation, a duplex-printing image will be displayed in the same color (shade).

[0053] So, in this tape airline printer 1, while considering as the gradation expressing ****** as which a display 84 can display the gradation of the printing image of a character, the duplex-printing image is displayed for the gradation of the printing image of an ornament background on the display 84 as other gradation. Specifically, CPU210 is controlling the gradation of the duplex-printing image memorized by RAM240 as mentioned above. Therefore, the gradation control means is constituted by CPU210, RAM240, etc.

[0054] If the display of the printing image of the character in a display 84 and the printing image of an ornament background is explained further in full detail, this display 84 is constituted so that a printing image may be displayed with monochrome 4 gradation, as mentioned above. Therefore, about the printing image of a character, it is displayed with 1 gradation expressing ******, and, on the other hand, is displayed with other 3 gradation about the printing image of an ornament background.

[0055] Thus, by displaying a printing image with 4 gradation, the printing image of a character and an ornament background can be displayed in the very good condition. That is, when a printing image is displayed with the gradation beyond 4 gradation, the gradation of the printing image of a character and the gradation which expresses a dark color most among the printing images of an ornament background approximate compared with the case of 4 gradation displays, and there is a

possibility of being hard that it may come to identify the printing image of the character to an ornament background. If a printing image is displayed with gradation fewer than 4 gradation, for example, 3 gradation, the gradation which can be used for the printing image of an ornament background will turn into 2 gradation, and it will become impossible on the contrary, to display only a thing simple as a pattern of an ornament background.

[0056] Therefore, while expressing ****** for the gradation of the printing image of a character, even if it displays the printing image of a character, and the printing image of an ornament background in piles by displaying 4 gradation of printing images as mentioned above, a duplex-printing image can be identified easily and clearly, and, moreover, a complicated ornament background can also be identified clearly somewhat. Moreover, in the tape airline printer 1, control of a manufacturing-cost rise of the whole equipment can also be aimed at by using the monochrome liquid crystal display of 4 gradation displays.

[0057] In addition, one [at least] gradation should just be changed so that the gradation of the printing image of a character is not limited to considering as the gradation which always expresses ****** as mentioned above, and a gradation difference may arise among both gradation, when the gradation of the duplex-printing image of a character and an ornament background is the same. If it is this case, it is clearly identifiable in the printing image of a character, and the printing image of an ornament background. Moreover, it is desirable to make it the gradation which expresses a dark color for the gradation of the printing image of a character in this case more relatively than the gradation of the printing image of an ornament background, and, in this case, it can identify the printing image of a character still more clearly.

[0058] Moreover, about background edit of a character, an ornament background like the above "warning" is set up, and also a desired color (background color) can be chosen and a plain background can also be set up. In this case, the indicator 85 (left end of the drawing 4 top) of a "solid color color" in which it is shown that the plain background is set up lights up. In addition, when the set-up background color and the alphabetic character color of the set-up character which is mentioned later are the same, the notice of warning as shown in a part for the display of a printing image at drawing 11 is displayed temporarily, and calls a user's attention.

[0059] Next, the case where the alphabetic character color of the strings of characters of "handling cautions" is set up is explained. A function key 320 is operated suitably and the operation mode is made to change from input mode to the alphabetic character color edit mode like edit of the above-mentioned background also in this case. If it does so, a display 84 will change to the edit display of an alphabetic character color, and the various alphabetic character colors shown in drawing 12 will be displayed. And while operating a cursor key 327 suitably and doubling cursor with a desired alphabetic character color, the depression of the selection key 328 is carried out. Thereby, the alphabetic character color of the strings of characters of "handling cautions" is set up.

[0060] Suppose that red was set up to the whole "handling cautions" in edit of this alphabetic character color. In this case, even if it is a time of the gradation of the strings of characters of "handling cautions" and the gradation of the ornament background of the above "warning" becoming the same, as mentioned above, the printing image of the ornament background of "warning" is displayed with other gradation with the gradation with which the printing image of "handling cautions" expresses ****** (refer to drawing 10).

[0061] Although the case where the background and alphabetic character color of a character were set up was explained as an example of edit above, it has come to be able to perform many edits in the tape airline printer 1 in addition to these. Although omitted about a detailed configuration procedure, some of other edits are shown in the following table 1 also including the above-mentioned edit.

[0062]

[Table 1]

編　集	選択肢の具体例
文字色	赤色、青色、黄色、…
文字色濃度	－２、－１、±０、＋１、＋２
文字輪郭色	赤色、青色、黄色、…
背景名(背景色)	赤ﾁｪｯｸ、カラクサ、花がら、警告、…
背景濃度	－２、－１、±０、＋１、＋２
文字サイズ	１８、２４、３２、４８、６４、…(ドット)
文字フォント	明朝、ゴシック、…
文字飾り	影付、網掛、アンダーライン、…
文字体	正体、斜体、中抜き、…
文字伸縮	ふつう、伸び、縮み
外枠	丸枠、角枠、…
余白長	極小、小、大、極大
テープ長	１．０、～、４．０、～、５０(ｃｍ)

[0063] In addition, in the above-mentioned table 1, it is shown that the edit "--" is indicated to be by the column of "the example of alternative" exists besides that alternative was indicated to be. Moreover, although "the rounded envelope and rectangular flask —" are indicated by the example of an outer frame, the configuration of the outer frame is displayed on it in fact (refer to drawing 13 (f) and (g)).
[0064] Moreover, as shown in the above-mentioned table 1, margin length before and after being the printing conditions in the case of printing an image on the printing tape T1 besides the edit ("alphabetic character color" - "an outer frame") about the image itself, and the die length (tape length) of a label created are also contained in edit. [of Table 1] As well as the above-mentioned edit when setting up these printing conditions, a display 84 is changed to an edit display and performed.
[0065] Although you may print immediately after editing to the character inputted as mentioned above, in this tape airline printer 1, the contents of edit set up about each edit before printing can be checked easily. Namely, the information (printed information) based on the contents of edit can be put in block to the display 84 of the display screen 81, and can be displayed now. In addition, this function is called "property display function" below.
[0066] In performing property display capabilities, it carries out the depression of the predetermined function key 320 of a keyboard 3. If it does so, the operation mode will change in printing information-display mode from input mode, a display 84 will change to the screen shown in drawing 13 (a), and printed information will be displayed on a display 84.
[0067] In this property display function, the printed information by each edit of the above-mentioned table 1 memorized by RAM240 is read to CPU210, and is displayed on a display 84 possible [scrolling] through the liquid crystal drive circuit 283.
[0068] When three items of each printed information is displayed at a time on a display 84 and operates a cursor key 327 suitably in fact, as shown in drawing 13 (a) - (g), printed information scrolls and is displayed. In addition, each printed information is scrolled in the right end of a display 84, and by displaying upward or downward Mark Misumi and carrying out the depression of the cursor key 327 of the sense shows that other printed information can be displayed to it.
[0069] Moreover, presenting of printed information is not limited to that by which it is indicated as mentioned above by scrolling, and you may make it change and display printed information by operating the predetermined function keys (cursor key etc.) 320 suitably for every printed information displayed on a display 84. Since printed information is changed and displayed only by carrying out the depression of the predetermined function key once by every [of printed information] number of display items (it is 3 in the case of an operation gestalt) in this case, a user can check all the printed information quickly before printing.
[0070] And after checking printed information, by carrying out the depression of the printing key 321 of a keyboard 3, the printing image reflecting the edit set up above is printed by the printing tape T1, and the lamination tape T2 is stuck on the printing part. Then, the printing part of Tape

T is discharged from the tape exhaust port 10 outside, is cut by the cutting section 13, and a label as shown in drawing 14 is completed. In addition, the alphabetic character of "handling cautions" shown in this drawing is a shadow alphabetic character, and the alphabetic character color and **** are color-printed with red and black, respectively. Moreover, the whole background is yellow, and Mark Misumi and an outer frame are black, and further, the "!" mark is white and is color-printed.

[0071] As explained above, it is the case where the image of the printing image about the background which can be color-printed, and a character is displayed mutually in piles at a display 84, and since he is trying for a gradation difference to arise between the gradation of both images even if the display 84 consists of monochrome liquid crystal displays, the printing image of a character is clearly [ease and] discriminable according to this operation gestalt, to the printing image of a background. Moreover, since printed information is put in block to a display 84 and he is trying to make it display on it, all the printed information can be easily checked by easy actuation. Therefore, the input of a character etc. and the activity from edit to printing can be done ease and quickly, and before printing the image moreover printed, it can imagine in a detail.

[0072] In addition, although the operation gestalt explained the case where this invention was applied to a tape airline printer, it cannot be overemphasized that it is applicable to a word processor etc.

[0073]

[Effect of the Invention] Since it is made for a gradation difference to arise between the gradation of both images according to this invention as explained above even if it is the case where display in piles the character image and background image which can be color-printed, and the monochrome display of both the images is carried out, a character image and a background image are clearly [ease and] discriminable.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the image display approach in for example, a tape airline printer, a word processor (word processor), etc. at the electronic equipment list equipped with the image display device which carries out the monochrome display of the image which can be color-printed, and its equipment.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] Conventionally, by the electronic equipment in which this kind of color printing is possible, the monochrome liquid crystal display is used abundantly from the request of the low price of a device at that image display device. When the image which can be color-printed is displayed on this monochrome liquid crystal display, that image is displayed in white, black, or gray in the meantime based on gradation (lightness). That is, an image is displayed in the gray near black or black, when gradation is a value expressing a dark color, while being displayed in the gray near white or white, when the gradation is a value expressing light color.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] Since it is made for a gradation difference to arise between the gradation of both images according to this invention as explained above even if it is the case where display in piles the character image and background image which can be color-printed, and the monochrome display of both the images is carried out, a character image and a background image are clearly [ease and] discriminable.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] Thus, when the image which can be color-printed is displayed on a monochrome liquid crystal display, are concerned, and the image is not in color data in three primary colors (red, green, blue), and is displayed only based on gradation. For this reason, even if the color data of the image (character image) of a character compared and inputted differ from the color data of the image (background image) of the background of that image, when the gradation of both images is the same, a character image and a background image will be displayed in the same color (shade). Therefore, since the character image in a monochrome liquid crystal display is displayed in the condition of having been buried in the background image, it becomes difficult [the discernment] very [it].
[0004] This invention is made in order to solve the above technical problems, and even if it is the case where the monochrome display of the image which can be color-printed is carried out, it aims at providing with the image display approach the electronic equipment list equipped with the image display device which can identify a character image and a background image ease and clearly, and its equipment.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In the image display device which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on a background image, and which can be color-printed based on the gradation of each image, when the gradation of a character image is the same as the gradation of a background image, the image display device concerning this invention is characterized by having the gradation control means which makes the gradation of one [at least] image change so that a gradation difference may arise among both gradation.
[0006] In the image display approach which carries out the monochrome display of the background image which can be color-printed, and the character image which is displayed in piles on a background image, and which can be color-printed based on the gradation of each image, when the gradation of a character image is the same as the gradation of a background image, the image display approach concerning this invention makes both gradation different, and is characterized by displaying a character image and a background image.
[0007] Since the gradation of both images is made according to the above configuration to change so that a gradation difference may arise when carrying out the monochrome display of the character image and background image of the same gradation, the shades of those images are made to be able to differ and it can be made to display. For this reason, even if it displays a character image in piles on a background image, a character image is clearly [easily and] discriminable to a background image.
[0008] In this case, as for a gradation control means, it is desirable to make it change into the gradation which expresses a dark color for the gradation of a character image more relatively than a background image.
[0009] According to this configuration, since a character image is displayed in a dark color more relatively than a background image, a character image can be floated up to a background image, and it can identify still more clearly.
[0010] Moreover, it is desirable to make a gradation control means change into the gradation which expresses ****** for the gradation of a character image in this case.
[0011] Since a character image is displayed by ******, when according to this configuration a display with 3 or more gradation is possible for an image and a background image has a pattern, for example, the pattern of a background image can be displayed with 2 or more gradation except the gradation expressing ******. Therefore, while making a character image identifiable still more clearly to a background image, the pattern of a background image is also clearly discriminable.
[0012] The electronic equipment concerning this invention is characterized by having the image display device of claim 1 thru/or either of 3, and the printing means which can color-print the display result of an image display device.
[0013] Since according to this configuration it can print when the image (a character image and background image) displayed on an image display device has been grasped clearly, the input of a character etc. and the activity from edit to printing can be done ease and quickly.
[0014]
[Embodiment of the Invention] The case where the image display approach is applied to a tape airline printer is explained to the electronic equipment list hereafter equipped with the image

display device concerning 1 operation gestalt of this invention, and its equipment with reference to the accompanying drawing. As shown in drawing 1 , the tape airline printer 1 color-prints the character of the request which keyed etc. by the ink jet method on Tape T, cuts the printing part of this tape T, and creates a label.

[0015] The tape airline printer 1 is equipped with the body 2 of equipment, the keyboard 3 which performs an input, edit, etc. of a character, the tape cartridge 4 which held the tape T which is print media, and the ink cartridge 5 (refer to drawing 2) filled up with the ink of four colors, and it is equipped with the tape cartridge 4 and the ink cartridge 5 free [attachment and detachment] to the body 2 of equipment.

[0016] The closing motion lid 7 to form the outer shell in the equipment case 6, and for the body 2 of equipment detach and attach a tape cartridge 4 and an ink cartridge 5 in the upper part of the equipment case 6 is formed widely. The scuttle 9 corresponding to the image display section 8 built in the body 2 of equipment is formed in the upper right portion by the side of before this closing motion lid 7 (keyboard 3 side), and transparence panel 9a is attached to this scuttle 9. Moreover, the tape exhaust port 10 of the shape of a slit for discharging Tape T outside is formed in the side face of the equipment case 6.

[0017] As shown in drawing 2 , the circuit board 14 grade which controls the tape cartridge 4 which wound and held Tape T, the tape-feed section 11 which sends out Tape T to the exterior of the body 2 of equipment, the printing section 12 which color-prints a printing image, the cutting section 13 which cuts Tape T, and each part of the tape airline printer 1 is carried in the interior of the equipment case 6.

[0018] The tape cartridge 4 is equipped with the printing tape T1 on which a printing image is printed, and the lamination tape T2 stuck on the printing part of this printing tape T1 from a top. These printing tapes T1 and the lamination tape T2 are wound around printing tape hold section 4a and lamination tape hold section 4b which were arranged in right-and-left both sides on both sides of the printing section 12, respectively, and are held in them. The printing tape T1 consists of an adhesive layer with which the rear face of a base material tape and this base material tape was plastered, and a releasing paper tape stuck on the adhesive layer. On the other hand, the lamination tape T2 consists of a base material tape which consists of a transparent film, and an adhesive layer with which the rear face of this base material tape was plastered. The base material tape of this lamination tape T2 is mostly formed in the same width of face with the printing tape T1, and in the case of printing, as it arranges crosswise both ends, it is stuck on the printing tape T1.

[0019] The printing section 12 is equipped with the carriage 22 which carried the ink cartridge 5 with which it equipped free [attachment and detachment] at the print head 121, and the print head 121 and an ink cartridge 5 through the cartridge holder 21 which prepared many ink nozzles (not shown) in this print head [which carried out alignment arrangement] 121, and print head 121 bottom at the tip, and the cartridge holder 21. The ink cartridge 5 is equipped with ink tank 5a with which the ink of four colors of yellow, cyanogen, a Magenta, and black was filled up. If the print head 121 is equipped with this ink cartridge 5, ink tank 5a of each color of an ink cartridge 5 will be open for free passage to the print head 121, and the supply of ink of it will be attained.

[0020] Carriage 22 is attached in the carriage guide shaft 23 prolonged crosswise [of the printing tape T1] free [a slide], and reciprocates to a longitudinal direction (cross direction of the printing tape T1) through the timing belt outside drawing by the forward reverse drive of the carriage motor (CR motor) 122 (refer to drawing 5). Moreover, if the gobo outside drawing protrudes on carriage 22 and this gobo attends the location detection sensor 98 (R> drawing 5 5 reference) which consists of a photo interrupter etc., it will detect that the print head 121 is in a home location (not shown), and location amendment of zero setting etc. will be performed. That is, since this home location is a criteria location in the case of printing while being a position in readiness of the print head 121, when only the predetermined number of steps rotates the CR motor 122 from this criteria location, desired color printing is performed on the front face of the printing tape T1 by moving carriage 22 with a precision sufficient in each location of the cross direction of the printing range of the printing tape T1, and making the print head 121 drive synchronizing with this.

[0021] Moreover, the discernment plate (not shown) in which the identification information by a bit pattern etc. is shown is prepared, and gets down to a tape cartridge 4, and when the discernment sensor 99.(refer to drawing 5) carried in carriage 22 attends the above-mentioned discernment plate, the printing starting position to the classification of Tape T and the printing tape T1 of the tape T etc. is detected.
[0022] The print head 121 of the tape-feed section 11 was pinched, and it is equipped with printing tape side delivery device 11a prepared in the upstream and the downstream of a feed direction, respectively, and lamination tape side delivery device 11b. Printing tape side delivery device 11a is equipped with the delivery roller 41 which comes to arrange the delivery follower roller 42 and the delivery driving roller 43 up and down, and the tape-feed motor (PF motor) 111 (refer to drawing 5) which carries out the rotation drive of the delivery driving roller 43.
[0023] The delivery driving roller 43 is formed in the body 2 of equipment, and the delivery follower roller 42 is formed in the tape cartridge 4. If the body 2 of equipment is equipped with a tape cartridge 4, as the delivery follower roller 42 puts the printing tape T1 between the delivery driving rollers 43, it will press this. And the printing tape T1 put between the delivery follower roller 42 and the delivery driving roller 43 is sent to them by rotating the tape-feed motor 111 in this condition.
[0024] On the other hand, lamination tape side delivery device 11b is equipped with the lamination roller 44 which comes to arrange the lamination follower roller 45 and the lamination driving roller 46 up and down, and the lamination motor outside drawing which carries out the rotation drive of the lamination driving roller 46. In addition, this lamination motor and the above-mentioned tape-feed motor are the same (PF motor 111), power branches through the speed reducing gear train outside drawing, and the delivery roller 41 and the lamination roller 44 are operated, respectively.
[0025] The lamination driving roller 46 and the lamination follower roller 45 are formed in the body 2 of equipment, and the tape cartridge 4, respectively like the above-mentioned delivery driving roller 43 and the delivery follower roller 42. If the body 2 of equipment is equipped with a tape cartridge 4, as the lamination follower roller 45 puts the printing tape T1 and the lamination tape T2 between the lamination driving rollers 46, it will press these. and . When a lamination motor rotates in this condition, the printing tape T1 and the lamination tape T2 which were put between the lamination follower roller 45 and the lamination driving roller 46 are sent to them, sticking.
[0026] The cutting section 13 is constituted by the cutter motor 131 (refer to drawing 5) which carries out cutting actuation of a cutter 51 and it. After the completion of printing, Tape T stops, after the step feed only of the predetermined distance is carried out by the PF motor 111. A cutter motor 131 drives immediately after that, and the printing part of Tape T is cut.
[0027] The keyboard 3 is attached free [****] to the body 2 of equipment. For this reason, in changing into the condition of having pulled down the keyboard 3 when the tape airline printer 1 was used (refer to drawing 1), and carrying the tape airline printer 1 or containing, it changes into the condition of having caused the keyboard 3. Thus, since the whole equipment becomes compact in case it carries or contains, the tape airline printer 1 is the thing excellent in portability and storability.
[0028] Drawing 3 is the key plot plan of a keyboard 3. As shown in this drawing, many the character keys 310 and these character keys 310 for inputting characters, such as an alphabetic character and a notation, into a keyboard 3 are pinched, and two or more of the function keys 320;320 are formed up and down, respectively. Each key of the character key 310 is formed in circular convex, and a hiragana, the alphabet, the figure, or the notation is indicated by the front face and bottom (drawing 3 indicates a part). On the other hand, the key of most function keys 320,320 of vertical both sides is formed in rectangle convex, and the function of each key etc. is indicated by the front face and bottom (drawing 3 indicates a part).
[0029] The upper function key 320 is equipped with the key for making the operation mode of the tape airline printer 1 mainly change to various kinds of edit modes. therefore, the thing to do for the depression of these keys -- for example, the operation mode can be made to change to the alphabetic character color edit mode for setting up the background edit mode for setting up

the background of the inputted image of a character, or the alphabetic character color of a character image etc. In addition, the printing key 321 for ordering it printing actuation is arranged in the left end.

[0030] On the other hand, the lower function key 320 carries out kanji conversion, when the operation mode is input mode, and when it is the edit mode, it is equipped with the key for specifying a desired thing out of alternative. In following, for example, carrying out kanji conversion of the input character, the conversion key 326, a cursor key 327, and the selection key 328 are operated suitably, and it performs them. In addition, Shift-key 324 is for making the function which inputted the alphabetic character indicated by the character key 310 bottom, or was indicated by the function key 320 bottom perform by carrying out a depression to the character key 310, other function keys 320, and coincidence. Moreover, a sign 325 is the power-source key of the tape airline printer 1.

[0031] Drawing 4 is the expansion top view showing the image display section 8. The image display section 8 is equipped with the display screen 81 which displays the inputted image of a character. This display screen 81 consists of monochrome liquid crystal displays, and is constituted by the liquid crystal display section 82 which displays said two or more indicators 85 mentioned later, such as an image, with liquid crystal, and the mode written section 83 which indicated beforehand the semantics which it is prepared in the perimeter of the liquid crystal display section 82, and each indicator 85 shows. In the liquid crystal display section 82, the image image (printing image) at the time of printing its image besides a character image, the menu at the time of image edit, alternative, etc. are displayed on the display 84 which occupies the most. Moreover, in this liquid crystal display section 82, when displaying a printing image, that image can be displayed with 4 gradation (4 gradation displays).

[0032] By the tape airline printer 1, it is an input state (a Roman alphabet input) from a keyboard 3. The typeface of the character image at the time of printings, such as a kana input, (a Mincho typeface, block letter, etc.), the background (a solid color color —) of printing styles (columnar writing, fixed-length printing, etc.) and a character image an ornament etc. — etc. (henceforth a "mode style") etc. — it indicates what kind of mode style set up at the time of use by making an indicator 85 turn on about a setup. When the indicator 85 which follows, for example, is located directly under a "Roman alphabet" when an input state is a Roman alphabet input lights up and the block letter is specified as the typeface of a character image, the indicator 85 located directly under a "block letter" lights up.

[0033] Next, with reference to drawing 5 , the fundamental configuration of the control system in the tape airline printer 1 is explained. The control section 200 by which control of the tape airline printer 1 was carried in the above-mentioned circuit board 14 based on the input signal from a keyboard 3, the location detection sensor 98, and the discernment sensor 99 is controlling the printing section 12, the tape-feed section 11, the cutting section 13, and the image display section 8 through the drive circuit section 280 to be shown in this drawing.

[0034] A control section 200 is equipped with CPU210, ROM220, character generators ROM (CG-ROM)230 and RAM240, the input interface 250, and the output interface 260, and these are mutually connected by the bus 270.

[0035] ROM220 has memorized the others and color translation table 221 which is the control program processed by CPU210, the character decoration table 222, etc. CG-ROM230 has memorized the font data of the character of the alphabetic character currently prepared for the tape airline printer 1, a notation, a graphic form, etc., and when the code data which specify a character are given, it outputs font data.

[0036] RAM240 has fields, such as the text memory 242 which memorizes the text data of a character inputted from the various register groups 241 and a keyboard 3, the display-image data memory 243 which memorizes the display-image data of a display screen 81, and the printing image data memory 244 which memorizes printing image data, and is used as a working area for control processing. In addition, even if a power source is turned OFF, RAM240 receives supply of a power source by the backup circuit (not shown) so that the memorized data may be held.

[0037] The input interface 250 is a circuit for connecting with a keyboard 3, the location

detection sensor 98, and discernment sensor 99 grade, and incorporating the location detecting signal from the various commands and input data from a keyboard 3, and the location detection sensor 98, the identification information signal from the discernment sensor 99, etc. into a bus 270. Moreover, the output interface 260 is a circuit for outputting data and the control signal which were outputted to the bus 270 from the CPU210 grade to the drive circuit section 280.
[0038] As for the location detection sensor 98, the print head 121 detects the classification and the printing starting position of a tape cartridge 4 or Tape T by detecting having arrived at the home location, and the discernment sensor 99 inputs each detecting signal into a control section 200.
[0039] Moreover, the drive circuit section 280 is constituted by the head drive circuit 281, the motorised circuit 282, and the liquid crystal drive circuit 283. The head drive circuit 281 drives the print head 121 of the printing section 12 according to the control signal outputted from a control section 200. Similarly, the motorised circuit 282 drives the CR motor 122 of the printing section 12, the PF motor 111 of the tape-feed section 11, and the cutter motor 131 of the cutting section 13 according to directions of a control section 200. Similarly, the liquid crystal drive circuit 283 controls the image display section 8 according to directions of a control section 200.
[0040] Thus, in the constituted control system, according to the control program in ROM220, CPU210 of a control section 200 inputs the location detecting signal from the various commands from a keyboard 3, various data, and the location detection sensor 98, the identification-information signal from the discernment sensor 99, etc. through the input interface 250, processes the font data from CG-ROM230, the various data in RAM240, etc., and is outputting the control signal to the drive circuit section 280 through the output interface 260. Thereby, while performing printing control, the display control of the display screen 81, etc., the print head 121 is controlled and the tape airline printer 1 whole is controlled, such as color-printing on Tape T on predetermined printing conditions.
[0041] The actuation from which the image display approach serves as that description, showing operating procedure until the image display section 8, the control section 200, and the keyboard 3 mainly realize and it creates a label below with reference to drawing 6 - drawing 14 is explained to the electronic equipment list which was equipped with the image display device of this invention, and its equipment in the case of this tape airline printer 1.
[0042] First, if a power source is turned ON and the tape airline printer 1 is started, the image of a condition just before turning OFF the power source at the time of the last starting will be displayed on the display screen 81. That is, in this tape airline printer 1, even if a power source is turned OFF, in addition to various setup which the user registered, the data of the last image are memorized by RAM240 with that edit data (the data of a mode style are also included), and the image based on the data and edit data of that image is displayed on the display screen 81 immediately after starting. In addition, when eliminating all images inputted at the time of the last starting, such as a character, turning OFF the power source or using the tape airline printer 1 for the first time, as shown in drawing 6 R> 6, only the head-of-the-sentence mark (mark by which the line number was square and was surrounded) which shows the line at the time of printing is displayed on the display 84 of the display screen 81.
[0043] Here, when only the head-of-the-sentence mark shown in drawing 6 is displayed, the strings of characters of "handling cautions" are inputted, various edits are performed to these strings of characters, and order is explained later on about until it prints after that and creates a label.
[0044] Drawing 7 is drawing showing the display 84 immediately after inputting the strings of characters of "handling cautions." If the strings of characters of "handling cautions" are inputted as shown in this drawing, in addition to the strings of characters of "handling cautions", the printing image of "handling cautions" and the die length (henceforth "tape length") of the label will be displayed on a display 84 by the Johan section.
[0045] The data of the strings of characters of "handling cautions" are developed by RAM240 for a printing image, and this printing image is displayed on the display 84 by outputting that control signal to the liquid crystal drive circuit 283. On the other hand, tape length is calculated

based on the character size of each character of "handling cautions", the number of characters, and the distance between characters, and the value which added the order margin to the value is displayed. In addition, in the tape airline printer 1, in order to create the label of fixed die length, (fixed-length printing) and a user can set up that die length now themselves, and that set-up die length is displayed as tape length in this case.

[0046] Although it is also possible to print as it is and to create a label, of course after inputting the strings of characters of "handling cautions" as mentioned above, in the tape airline printer 1, it is possible to perform various edits to the inputted character, and, thereby, the rich label of power of expression can be created. So, below, the case where the background and alphabetic character color of a character are set up is explained as an example of edit.

[0047] If the predetermined function key 320 for the operation mode to set up a background in the condition (to refer to drawing 7) of being input mode is operated suitably, the operation mode will change from input mode to the background edit mode, a display 84 will change to the edit display of a background, and the various backgrounds (the background which has a pattern is hereafter called "ornament background") shown in drawing 8 will be displayed. That is, based on the command of the background edit from a keyboard 3, CPU210 reads various ornament backgrounds from ROM220, and these are displayed on the display 84 of the display screen 81 through the liquid crystal drive circuit 283.

[0048] As shown in drawing 8 , the title ("ornament background" in this case) of background edit is displayed on the upper part of a display 84, and the ornament background of selectable plurality (in the case of this operation gestalt, it is three to one screen) is displayed on it by that bottom. Specifically, the image image of an ornament background is displayed on a right half part by the left half part of a display 84 with the serial number to which the name (background name) was beforehand assigned by each ornament background. In addition, this serial number is for closing a user's selection based on the list of the ornament backgrounds which were offered beforehand and color-printed, if .

[0049] As shown in drawing 8 , by the edit display of a background, one of the background names is displayed in white (drawing 8 "KARAKUSA"), and it is shown that the background is set up at the time of the last starting. Here, after operating a cursor key 327 suitably and doubling cursor (tone reversal) with the background name of a desired ornament background, the depression of the selection key 328 is carried out. Thereby, a desired ornament background is set up as a background of the strings of characters of "handling cautions." In addition, if the depression of the cursor key 327 of an arrow down ("**") is carried out further, an ornament background and a background name will scroll up one by one, and the ornament background and background name outside drawing will be displayed on a display 84 in the place which doubled cursor with "flower GARA."

[0050] Suppose that the ornament background (background name: warning) shown in drawing 9 was set up in edit of this background. In addition, if color-printed, the whole is yellow, left end Mark Misumi will have the white "!" mark in black and its Mark Misumi, and the ornament background of this "warning" will be printed.

[0051] If a setup of a background is completed, the operation mode will change from the background edit mode to input mode again, and a display 84 will change to the screen shown in drawing 10 . That is, the printing image of the ornament background of "warning" set up above is displayed on the Johan section of the display 84 as which the printing image is displayed in piles as the background with the printing image of the strings of characters of "handling cautions." Moreover, a background name is displayed on the left end of the Johan section of a display 84 with tape length. In addition, the indicator 85 (from the left of the drawing 4 top to the 2nd) in which it is shown that the ornament background is set up in this case lights up.

[0052] In a display 84, as for the printing image of the strings of characters of "handling cautions", and the printing image of the ornament background of "warning", the shade is displayed by each based on the gradation of color data among each data for printing. That is, since the display 84 consists of monochrome liquid crystal displays, the image of a printing image is displayed in the gray near black or black, when gradation is a value expressing a dark color, while being displayed in the gray near white or white, when the above-mentioned gradation is a

value expressing light color. Therefore, the gradation of the data for printing of the strings of characters of "handling cautions" and the ornament background of "warning" is temporarily the same. And though the alphabetic character color of the strings of characters of "handling cautions" when comparing and color-printing and the color (background color) of the ornament background of "warning" are different in displaying a duplex-printing image on a display 84 with the gradation, a duplex-printing image will be displayed in the same color (shade).

[0053] So, in this tape airline printer 1, while considering as the gradation expressing ****** as which a display 84 can display the gradation of the printing image of a character, the duplex-printing image is displayed for the gradation of the printing image of an ornament background on the display 84 as other gradation. Specifically, CPU210 is controlling the gradation of the duplex-printing image memorized by RAM240 as mentioned above. Therefore, the gradation control means is constituted by CPU210, RAM240, etc.

[0054] If the display of the printing image of the character in a display 84 and the printing image of an ornament background is explained further in full detail, this display 84 is constituted so that a printing image may be displayed with monochrome 4 gradation, as mentioned above. Therefore, about the printing image of a character, it is displayed with 1 gradation expressing ******, and, on the other hand, is displayed with other 3 gradation about the printing image of an ornament background.

[0055] Thus, by displaying a printing image with 4 gradation, the printing image of a character and an ornament background can be displayed in the very good condition. That is, when a printing image is displayed with the gradation beyond 4 gradation, the gradation of the printing image of a character and the gradation which expresses a dark color most among the printing images of an ornament background approximate compared with the case of 4 gradation displays, and there is a possibility of being hard that it may come to identify the printing image of the character to an ornament background. If a printing image is displayed with gradation fewer than 4 gradation, for example, 3 gradation, the gradation which can be used for the printing image of an ornament background will turn into 2 gradation, and it will become impossible on the contrary, to display only a thing simple as a pattern of an ornament background.

[0056] Therefore, while expressing ****** for the gradation of the printing image of a character, even if it displays the printing image of a character, and the printing image of an ornament background in piles by displaying 4 gradation of printing images as mentioned above, a duplex-printing image can be identified easily and clearly, and, moreover, a complicated ornament background can also be identified clearly somewhat. Moreover, in the tape airline printer 1, control of a manufacturing-cost rise of the whole equipment can also be aimed at by using the monochrome liquid crystal display of 4 gradation displays.

[0057] In addition, one [at least] gradation should just be changed so that the gradation of the printing image of a character is not limited to considering as the gradation which always expresses ****** as mentioned above, and a gradation difference may arise among both gradation, when the gradation of the duplex-printing image of a character and an ornament background is the same. If it is this case, it is clearly identifiable in the printing image of a character, and the printing image of an ornament background. Moreover, it is desirable to make it the gradation which expresses a dark color for the gradation of the printing image of a character in this case more relatively than the gradation of the printing image of an ornament background, and, in this case, it can identify the printing image of a character still more clearly.

[0058] Moreover, about background edit of a character, an ornament background like the above "warning" is set up, and also a desired color (background color) can be chosen and a plain background can also be set up. In this case, the indicator 85 (left end of the drawing 4 top) of a "solid color color" in which it is shown that the plain background is set up lights up. In addition, when the set-up background color and the alphabetic character color of the set-up character which is mentioned later are the same, the notice of warning as shown in a part for the display of a printing image at drawing 11 is displayed temporarily, and calls a user's attention.

[0059] Next, the case where the alphabetic character color of the strings of characters of "handling cautions" is set up is explained. A function key 320 is operated suitably and the operation mode is made to change from input mode to the alphabetic character color edit mode

like edit of the above-mentioned background also in this case. If it does so, a display 84 will change to the edit display of an alphabetic character color, and the various alphabetic character colors shown in drawing 12 will be displayed. And while operating a cursor key 327 suitably and doubling cursor with a desired alphabetic character color, the depression of the selection key 328 is carried out. Thereby, the alphabetic character color of the strings of characters of "handling cautions" is set up.

[0060] Suppose that red was set up to the whole "handling cautions" in edit of this alphabetic character color. In this case, even if it is a time of the gradation of the strings of characters of "handling cautions" and the gradation of the ornament background of the above "warning" becoming the same, as mentioned above, the printing image of the ornament background of "warning" is displayed with other gradation with the gradation with which the printing image of "handling cautions" expresses ****** (refer to drawing 10).

[0061] Although the case where the background and alphabetic character color of a character were set up was explained as an example of edit above, it has come to be able to perform many edits in the tape airline printer 1 in addition to these. Although omitted about a detailed configuration procedure, some of other edits are shown in the following table 1 also including the above-mentioned edit.

[0062]

[Table 1]

編　集	選択肢の具体例
文字色	赤色、青色、黄色、…
文字色濃度	－２、－１、±０、＋１、＋２
文字輪郭色	赤色、青色、黄色、…
背景名(背景色)	赤ﾁｪｯｸ、カラクサ、花がら、警告、…
背景濃度	－２、－１、±０、＋１、＋２
文字サイズ	１８、２４、３２、４８、６４、…(ドット)
文字フォント	明朝、ゴシック、…
文字飾り	影付、網掛、アンダーライン、…
文字体	正体、斜体、中抜き、…
文字伸縮	ふつう、伸び、縮み
外枠	丸枠、角枠、…
余白長	極小、小、大、極大
テープ長	１．０、～、４．０、～、５０(ｃｍ)

[0063] In addition, in the above-mentioned table 1, it is shown that the edit "—" is indicated to be by the column of "the example of alternative" exists besides that alternative was indicated to be. Moreover, although "the rounded envelope and rectangular flask —" are indicated by the example of an outer frame, the configuration of the outer frame is displayed on it in fact (refer to drawing 13 (f) and (g)).

[0064] Moreover, as shown in the above-mentioned table 1, margin length before and after being the printing conditions in the case of printing an image on the printing tape T1 besides the edit ("alphabetic character color" - "an outer frame") about the image itself, and the die length (tape length) of a label created are also contained in edit. [of Table 1] As well as the above-mentioned edit when setting up these printing conditions, a display 84 is changed to an edit display and performed.

[0065] Although you may print immediately after editing to the character inputted as mentioned above, in this tape airline printer 1, the contents of edit set up about each edit before printing can be checked easily. Namely, the information (printed information) based on the contents of edit can be put in block to the display 84 of the display screen 81, and can be displayed now. In addition, this function is called "property display function" below.

[0066] In performing property display capabilities, it carries out the depression of the predetermined function key 320 of a keyboard 3. If it does so, the operation mode will change in printing information-display mode from input mode, a display 84 will change to the screen shown

in drawing 13 (a), and printed information will be displayed on a display 84.
[0067] In this property display function, the printed information by each edit of the above-mentioned table 1 memorized by RAM240 is read to CPU210, and is displayed on a display 84 possible [scrolling] through the liquid crystal drive circuit 283.
[0068] When three items of each printed information is displayed at a time on a display 84 and operates a cursor key 327 suitably in fact, as shown in drawing 13 (a) - (g), printed information scrolls and is displayed. In addition, each printed information is scrolled in the right end of a display 84, and by displaying upward or downward Mark Misumi and carrying out the depression of the cursor key 327 of the sense shows that other printed information can be displayed to it.
[0069] Moreover, presenting of printed information is not limited to that by which it is indicated as mentioned above by scrolling, and you may make it change and display printed information by operating the predetermined function keys (cursor key etc.) 320 suitably for every printed information displayed on a display 84. Since printed information is changed and displayed only by carrying out the depression of the predetermined function key once by every [of printed information] number of display items (it is 3 in the case of an operation gestalt) in this case, a user can check all the printed information quickly before printing.
[0070] And after checking printed information, by carrying out the depression of the printing key 321 of a keyboard 3, the printing image reflecting the edit set up above is printed by the printing tape T1, and the lamination tape T2 is stuck on the printing part. Then, the printing part of Tape T is discharged from the tape exhaust port 10 outside, is cut by the cutting section 13, and a label as shown in drawing 14 is completed. In addition, the alphabetic character of "handling cautions" shown in this drawing is a shadow alphabetic character, and the alphabetic character color and **** are color-printed with red and black, respectively. Moreover, the whole background is yellow, and Mark Misumi and an outer frame are black, and further, the "!" mark is white and is color-printed.
[0071] As explained above, it is the case where the image of the printing image about the background which can be color-printed, and a character is displayed mutually in piles at a display 84, and since he is trying for a gradation difference to arise between the gradation of both images even if the display 84 consists of monochrome liquid crystal displays, the printing image of a character is clearly [ease and] discriminable according to this operation gestalt, to the printing image of a background. Moreover, since printed information is put in block to a display 84 and he is trying to make it display on it, all the printed information can be easily checked by easy actuation. Therefore, the input of a character etc. and the activity from edit to printing can be done ease and quickly, and before printing the image moreover printed, it can imagine in a detail.
[0072] In addition, although the operation gestalt explained the case where this invention was applied to a tape airline printer, it cannot be overemphasized that it is applicable to a word processor etc.

[Translation done.]

THIS PAGE BLANK (USPTO)

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] It is the appearance perspective view of the tape airline printer which applied the airline printer concerning 1 operation gestalt of this invention.
[Drawing 2] It is cross-section structural drawing showing the interior of the body of equipment of a tape airline printer.
[Drawing 3] It is the key plot plan of a keyboard.
[Drawing 4] It is the expansion top view showing the image display section.
[Drawing 5] It is the block diagram showing the control system of a tape airline printer.
[Drawing 6] It is an explanatory view explaining the initial screen of the display in a tape airline printer.
[Drawing 7] It is drawing showing the display at the time of carrying out a character input.
[Drawing 8] It is drawing showing the edit display in the case of setting up a background.
[Drawing 9] It is drawing showing the background (ornament background) of a background name "warning."
[Drawing 10] It is drawing showing the display after background assignment.
[Drawing 11] It is an explanatory view explaining the display at the time of giving a warning notice.
[Drawing 12] It is drawing showing the edit display in the case of setting up an alphabetic character color.
[Drawing 13] It is drawing showing the case where a display is made to indicate the printed information by scrolling.
[Drawing 14] It is drawing showing the label printed (color printing).
[Description of Notations]
1 Tape Airline Printer
2 Body of Equipment
3 Keyboard
4 Tape Cartridge
5 Ink Cartridge
8 Image Display Section
11 Tape-Feed Section
12 Printing Section
81 Display Screen
82 Liquid Crystal Display Section
84 Display
121 Print Head
200 Control Section
210 CPU
220 ROM
240 RAM
280 Drive Circuit Section
283 Liquid Crystal Drive Circuit

T Tape
T1 Printing tape
T2 Lamination tape

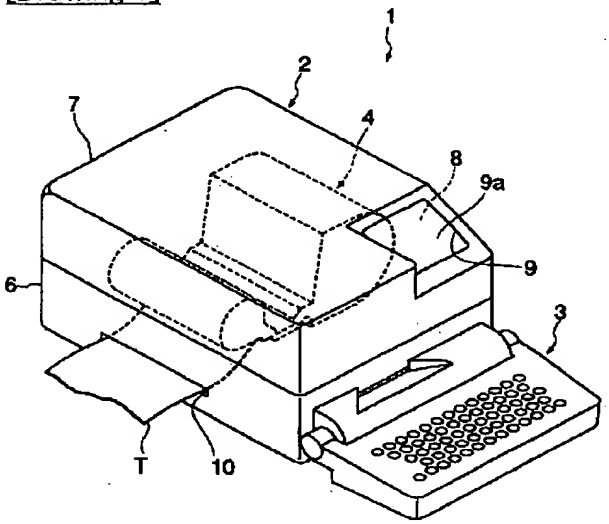
[Translation done.]

* NOTICES *

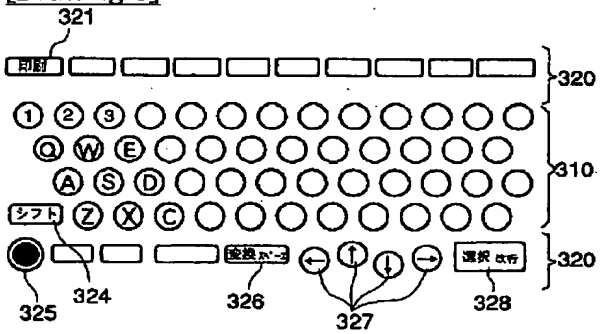
1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DRAWINGS

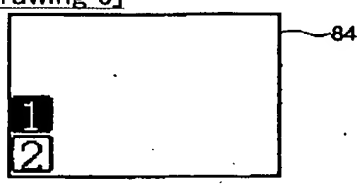
[Drawing 1]



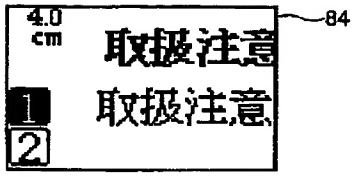
[Drawing 3]



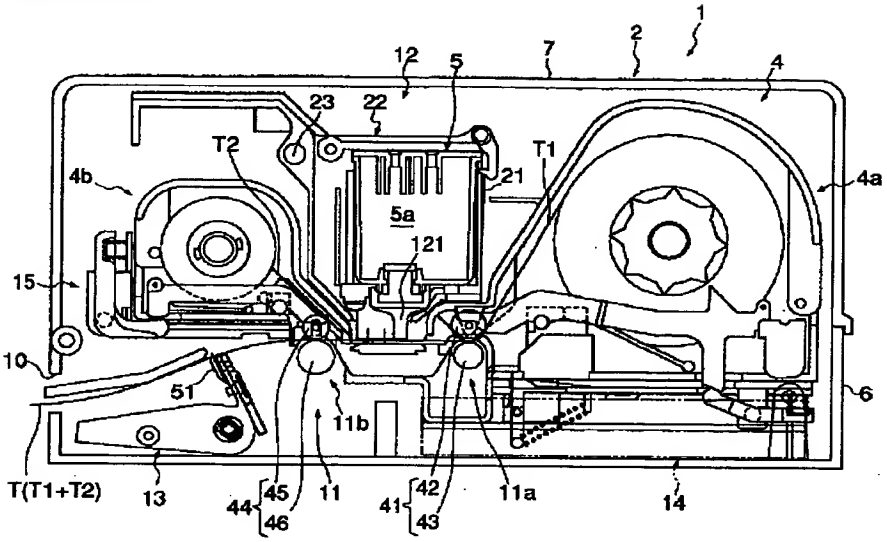
[Drawing 6]



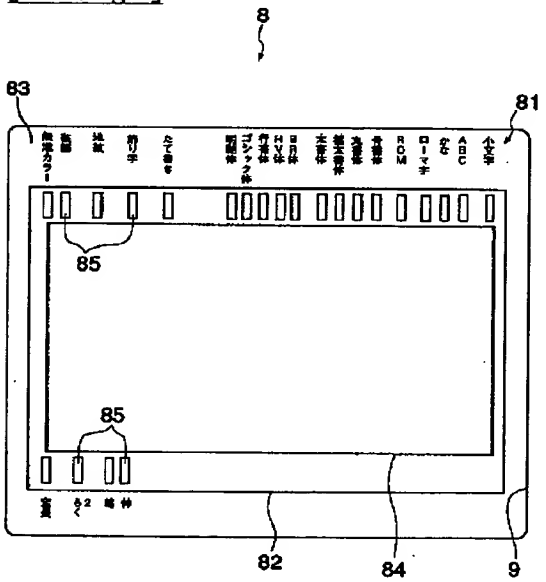
[Drawing 7]



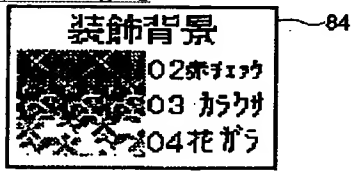
[Drawing 2]



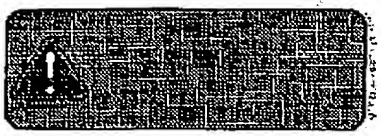
[Drawing 4]



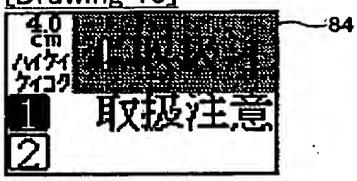
[Drawing 8]



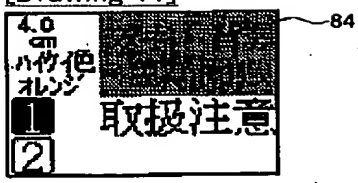
[Drawing 9]



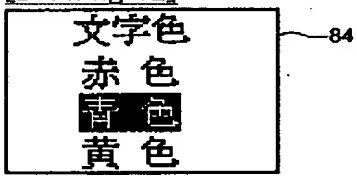
[Drawing 10]



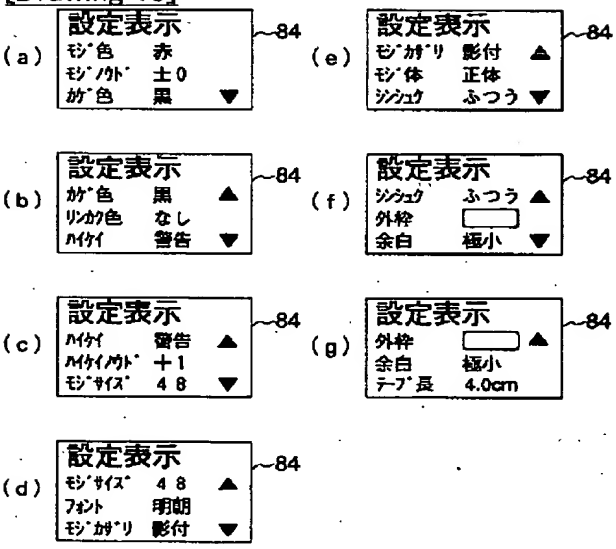
[Drawing 11]



[Drawing 12]

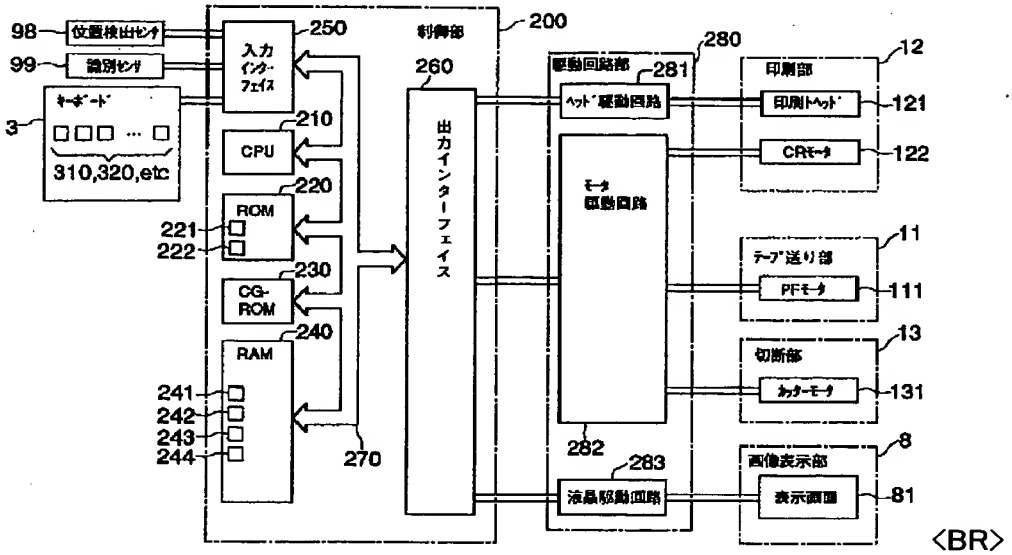


[Drawing 13]



[Drawing 14]

[Drawing 5]



[Translation done.]

(19)日本国特許庁（ＪＰ）　(12)公開特許公報（Ａ）　(11)特許出願公開番号

特開平11－231289

(43)公開日　平成11年(1999)８月27日

(51)Int.Cl.[6]		識別記号	FI		
Ｇ０２Ｆ	1/133	５７５	Ｇ０２Ｆ	1/133	５７５
Ｇ０６Ｔ	5/00		Ｇ０９Ｇ	5/00	５２０Ｈ
Ｇ０９Ｇ	5/00	５２０		5/36	５２０Ａ
	5/36	５２０	Ｇ０６Ｆ	15/68	３１０Ａ

審査請求　未請求　請求項の数５　ＦＤ　（全 11 頁）

(21)出願番号　特願平10－44564

(22)出願日　平成10年(1998)２月10日

(71)出願人　000002369
セイコーエプソン株式会社
東京都新宿区西新宿２丁目４番１号

(72)発明者　田中　静治
長野県諏訪市大和３丁目３番５号　セイコーエプソン株式会社内

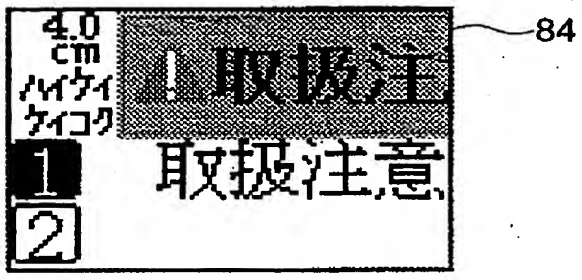
(74)代理人　弁理士　落合　稔　（外１名）

(54)【発明の名称】　画像表示装置およびその装置を備えた電子機器並びに画像表示方法

(57)【要約】

【課題】　カラー印刷可能な画像がモノクロ表示される場合であっても、キャラクタ画像と背景画像とを容易、かつ、明確に識別することができる画像表示装置およびその装置を備えた電子機器並びに画像表示方法を提供する。

【解決手段】　カラー印刷可能な背景画像と、背景画像上に重ねて表示するカラー印刷可能なキャラクタ画像とを、それぞれの画像の階調に基づいてモノクロ表示する画像表示装置において、キャラクタ画像の階調が背景の階調と同一の場合に、両階調間に階調差が生ずるように、少なくとも一方の画像の階調を変更させる階調制御手段を有する。



1

【特許請求の範囲】

【請求項１】　カラー印刷可能な背景画像と、当該背景画像上に重ねて表示するカラー印刷可能なキャラクタ画像とを、それぞれの画像の階調に基づいてモノクロ表示する画像表示装置において、

前記キャラクタ画像の階調が前記背景画像の階調と同一の場合に、当該両階調間に階調差が生ずるように、少なくとも一方の画像の階調を変更させる階調制御手段を有することを特徴とする画像表示装置。

【請求項２】　前記階調制御手段は、前記キャラクタ画像の階調を、前記背景画像よりも相対的に濃色を表現する階調に変更させることを特徴とする請求項１に記載の画像表示装置。

【請求項３】　前記階調制御手段は、前記キャラクタ画像の階調を、最濃色を表現する階調に変更させることを特徴とする請求項１または２に記載の画像表示装置。

【請求項４】　請求項１ないし３のいずれかの画像表示装置と、当該画像表示装置の表示結果をカラー印刷可能な印刷手段とを備えたことを特徴とする電子機器。

【請求項５】　カラー印刷可能な背景画像と、当該背景画像上に重ねて表示するカラー印刷可能なキャラクタ画像とを、それぞれの画像の階調に基づいてモノクロ表示する画像表示方法において、

前記キャラクタ画像の階調が前記背景画像の階調と同一の場合に、当該両階調を相違させて、前記キャラクタ画像および前記背景画像を表示することを特徴とする画像表示方法。

【発明の詳細な説明】

【０００１】

【発明の属する技術分野】本発明は、例えばテープ印刷装置やワードプロセッサ（ワープロ）などにおいて、カラー印刷可能な画像をモノクロ表示する画像表示装置およびその装置を備えた電子機器並びに画像表示方法に関する。

【０００２】

【従来の技術】従来、この種のカラー印刷可能な電子機器では、機器の低価格の要請から、その画像表示装置にモノクロ液晶ディスプレイが多用されている。このモノクロ液晶ディスプレイに、カラー印刷可能な画像が表示される場合、その画像は階調（明度）に基づいて、白もしくは黒またはその間の灰色で表示される。すなわち、画像は、その階調が淡色を表現する値である場合には、白または白に近い灰色で表示される一方、階調が濃色を表現する値である場合には、黒または黒に近い灰色で表示される。

【０００３】

【発明が解決しようとする課題】このように、カラー印刷可能な画像がモノクロ液晶ディスプレイに表示される場合、その画像は、３原色（赤、緑、青）のカラーデータに関わりなく、階調にのみ基づいて表示される。この

2

ため、例え入力したキャラクタの画像（キャラクタ画像）のカラーデータと、その画像の背景の画像（背景画像）のカラーデータとが異なっていても、両画像の階調が同一である場合には、キャラクタ画像および背景画像は同一色（濃淡）で表示されてしまう。したがって、モノクロ液晶ディスプレイにおけるキャラクタ画像は、背景画像に埋もれた状態で表示されるため、その識別が極めて困難となる。

【０００４】本発明は、以上のような課題を解決するためになされたものであり、カラー印刷可能な画像がモノクロ表示される場合であっても、キャラクタ画像と背景画像とを容易、かつ、明確に識別することができる画像表示装置およびその装置を備えた電子機器並びに画像表示方法を提供することを目的とする。

【０００５】

【課題を解決するための手段】本発明に係る画像表示装置は、カラー印刷可能な背景画像と、背景画像上に重ねて表示するカラー印刷可能なキャラクタ画像とを、それぞれの画像の階調に基づいてモノクロ表示する画像表示装置において、キャラクタ画像の階調が背景画像の階調と同一の場合に、両階調間に階調差が生ずるように、少なくとも一方の画像の階調を変更させる階調制御手段を有することを特徴とする。

【０００６】本発明に係る画像表示方法は、カラー印刷可能な背景画像と、背景画像上に重ねて表示するカラー印刷可能なキャラクタ画像とを、それぞれの画像の階調に基づいてモノクロ表示する画像表示方法において、キャラクタ画像の階調が背景画像の階調と同一の場合に、両階調を相違させて、キャラクタ画像および背景画像を表示することを特徴とする。

【０００７】以上の構成によれば、同一階調のキャラクタ画像および背景画像をモノクロ表示する場合に、階調差が生ずるように両画像の階調を変更させるので、それらの画像の濃淡を異ならしめて表示させることができる。このため、キャラクタ画像を背景画像上に重ねて表示しても、背景画像に対しキャラクタ画像を容易かつ明確に識別することができる。

【０００８】この場合、階調制御手段は、キャラクタ画像の階調を、背景画像よりも相対的に濃色を表現する階調に変更させることが好ましい。

【０００９】この構成によれば、キャラクタ画像を背景画像よりも相対的に濃色で表示するので、背景画像に対しキャラクタ画像を浮き立たせることができ、より一層明確に識別することができる。

【００１０】またこの場合、階調制御手段は、キャラクタ画像の階調を、最濃色を表現する階調に変更させることが好ましい。

【００１１】この構成によれば、キャラクタ画像を最濃色で表示するので、例えば画像が３階調以上で表示可能であって、背景画像が模様を有する場合に、最濃色を表

現する階調を除いた２階調以上で背景画像の模様を表示させることができる。したがって、背景画像に対しキャラクタ画像をより一層明確に識別可能とするとともに、背景画像の模様も明確に識別することができる。

【００１２】本発明に係る電子機器は、請求項１ないし３のいずれかの画像表示装置と、画像表示装置の表示結果をカラー印刷可能な印刷手段とを備えたことを特徴とする。

【００１３】この構成によれば、画像表示装置に表示される画像（キャラクタ画像および背景画像）を明確に把握した上で印刷することができるため、キャラクタ等の入力、編集から印刷までの作業を容易、かつ、迅速に行うことができる。

【００１４】

【発明の実施の形態】以下、添付図面を参照して、本発明の一実施形態に係る画像表示装置およびその装置を備えた電子機器並びに画像表示方法を、テープ印刷装置に適用した場合について説明する。図１に示すように、テープ印刷装置１は、キー入力した所望のキャラクタなどをテープＴにインクジェット方式でカラー印刷を行い、このテープＴの印刷部分を切断してラベルを作成するものである。

【００１５】テープ印刷装置１は、装置本体２と、キャラクタの入力や編集等を行うキーボード３と、印刷媒体であるテープＴを収容したテープカートリッジ４と、４色のインクを充填したインクカートリッジ５（図２参照）とを備えており、テープカートリッジ４およびインクカートリッジ５は、装置本体２に対し着脱自在に装着されている。

【００１６】装置本体２は、装置ケース６によりその外殻が形成され、装置ケース６の上部には、テープカートリッジ４およびインクカートリッジ５を着脱するための開閉蓋７が広く設けられている。この開閉蓋７の前側（キーボード３側）の右上部には、装置本体２に内蔵された画像表示部８に対応する小窓９が形成されており、この小窓９に透明パネル９ａが組み付けられている。また、装置ケース６の側面には、テープＴを外部に排出するためのスリット状のテープ排出口１０が形成されている。

【００１７】図２に示すように、装置ケース６の内部には、テープＴを巻回して収容したテープカートリッジ４、テープＴを装置本体２の外部へ送り出すテープ送り部１１、印刷画像をカラー印刷する印刷部１２、テープＴを切断する切断部１３およびテープ印刷装置１の各部を制御する回路基板１４等が搭載されている。

【００１８】テープカートリッジ４は、印刷画像が印刷される印刷テープＴ１と、この印刷テープＴ１の印刷部分に上から貼着するラミネートテープＴ２とを備えている。これらの印刷テープＴ１およびラミネートテープＴ２は、印刷部１２を挟み左右両側に配設された印刷テープ収容部４ａおよびラミネートテープ収容部４ｂにそれぞれ巻回して収容されている。印刷テープＴ１は、基材テープと、この基材テープの裏面に塗着した粘着層と、粘着層に貼着した剥離紙テープとで構成されている。一方、ラミネートテープＴ２は、透明なフィルムからなる基材テープと、この基材テープの裏面に塗着した粘着層とで構成されている。このラミネートテープＴ２の基材テープは、印刷テープＴ１とほぼ同一幅に形成されており、印刷の際に、幅方向の両端を揃えるようにして印刷テープＴ１に貼着される。

【００１９】印刷部１２は、先端に多数のインクノズル（図示せず）を整列配置した印刷ヘッド１２１と、この印刷ヘッド１２１の上側に設けたカートリッジホルダ２１と、カートリッジホルダ２１を介して印刷ヘッド１２１に着脱自在に装着したインクカートリッジ５と、印刷ヘッド１２１およびインクカートリッジ５を搭載したキャリッジ２２とを備えている。インクカートリッジ５は、イエロー、シアン、マゼンタおよびブラックの４色のインクが充填されたインクタンク５ａを備えている。このインクカートリッジ５を印刷ヘッド１２１に装着すると、インクカートリッジ５の各色のインクタンク５ａが印刷ヘッド１２１に連通し、インクの供給が可能となる。

【００２０】キャリッジ２２は、印刷テープＴ１の幅方向に延びるキャリッジガイド軸２３にスライド自在に取り付けられており、キャリッジモータ（ＣＲモータ）１２２（図５参照）の正逆駆動により、図外のタイミングベルトを介して、左右方向（印刷テープＴ１の幅方向）に往復動するようになっている。また、キャリッジ２２には、図外の遮光板が突設されており、この遮光板がフォトインタラプタなどから成る位置検出センサ９８（図５参照）に臨むと、印刷ヘッド１２１がホーム位置（図示せず）にあることを検出して、ゼロ点補正等の位置補正を行うようになっている。つまり、このホーム位置は、印刷ヘッド１２１の待機位置であるとともに、印刷の際の基準位置であるため、この基準位置からＣＲモータ１２２を所定のステップ数だけ回転させることにより、キャリッジ２２を印刷テープＴ１の印刷範囲の幅方向の各位置に精度良く移動させ、これと同期して印刷ヘッド１２１を駆動させることにより、印刷テープＴ１の表面に所望のカラー印刷が行われる。

【００２１】また、テープカートリッジ４には、ビットパターン等による識別情報を示す識別プレート（図示せず）が設けられており、キャリッジ２２に搭載した識別センサ９９（図５参照）が上記識別プレートに臨むことにより、テープＴの種別およびそのテープＴの印刷テープＴ１に対する印刷開始位置等が検出されるようになっている。

【００２２】テープ送り部１１は、印刷ヘッド１２１を挟んで、送り方向の上流側および下流側にそれぞれ設け

られた印刷テープ側送り機構１１ａおよびラミネートテープ側送り機構１１ｂを備えている。印刷テープ側送り機構１１ａは、送り従動ローラ４２および送り駆動ローラ４３を上下に配設してなる送りローラ４１と、送り駆動ローラ４３を回転駆動させるテープ送りモータ（ＰＦモータ）１１１（図５参照）とを備えている。

【００２３】送り駆動ローラ４３は装置本体２に設けられ、送り従動ローラ４２はテープカートリッジ４に設けられている。装置本体２にテープカートリッジ４を装着すると、送り従動ローラ４２が送り駆動ローラ４３との間に印刷テープＴ１を挟み込むようにして、これを押圧する。そして、この状態でテープ送りモータ１１１を回転させることにより、送り従動ローラ４２と送り駆動ローラ４３との間に挟み込まれた印刷テープＴ１が先方に送られる。

【００２４】一方、ラミネートテープ側送り機構１１ｂは、ラミ従動ローラ４５およびラミ駆動ローラ４６を上下に配設してなるラミネートローラ４４と、ラミ駆動ローラ４６を回転駆動させる図外のラミネートモータとを備えている。なお、このラミネートモータと上記のテープ送りモータとは、同一のもの（ＰＦモータ１１１）であり、図外の減速歯車列を介して動力が分岐され、それぞれ送りローラ４１およびラミネートローラ４４を作動させている。

【００２５】ラミ駆動ローラ４６およびラミ従動ローラ４５は、上記送り駆動ローラ４３および送り従動ローラ４２と同様に、それぞれ装置本体２およびテープカートリッジ４に設けられている。装置本体２にテープカートリッジ４を装着すると、ラミ従動ローラ４５がラミ駆動ローラ４６との間に印刷テープＴ１およびラミネートテープＴ２を挟み込むようにして、これらを押圧する。そして。この状態でラミネートモータが回転することにより、ラミ従動ローラ４５とラミ駆動ローラ４６との間に挟み込まれた印刷テープＴ１とラミネートテープＴ２とが、貼着しながら先方に送られる。

【００２６】切断部１３は、カッター５１とそれを切断動作させるカッターモータ１３１（図５参照）とにより構成されている。印刷完了後、テープＴはＰＦモータ１１１によって所定距離だけステップ送りされてから停止する。その直後、カッターモータ１３１が駆動して、テープＴの印刷部分が切断される。

【００２７】キーボード３は、装置本体２に対し起倒自在に取り付けられている。このため、テープ印刷装置１を使用する場合には、キーボード３を引き倒した状態にし（図１参照）、またテープ印刷装置１を携帯したり、あるいは収納しておく場合には、キーボード３を引き起こした状態にする。このように、テープ印刷装置１は、携帯または収納する際に、装置全体がコンパクトになるため、携帯性および収納性が優れたものとなっている。

【００２８】図３は、キーボード３のキー配置図である。同図に示すように、キーボード３には、文字や記号等のキャラクタを入力するための多数のキャラクタキー３１０と、これらのキャラクタキー３１０を挟み、その上下にそれぞれ複数の機能キー３２０，３２０とが設けられている。キャラクタキー３１０の各キーは、円形凸状に形成されており、その表面や上側には、平仮名、アルファベット、数字または記号が記載されている（図３では一部を記載）。一方、上下両側の機能キー３２０，３２０の大部分のキーは、矩形凸状に形成されており、その表面や上側には各キーの機能などが記載されている（図３では一部を記載）。

【００２９】上側の機能キー３２０は、主にテープ印刷装置１の操作モードを各種の編集モードに遷移させるためのキーを備えている。したがって、これらのキーを押下することにより、例えば入力したキャラクタの画像の背景を設定するための背景編集モード、またはキャラクタ画像の文字色を設定するための文字色編集モード等に、操作モードを遷移させることができる。なお、左端には印刷動作を指令するための印刷キー３２１が配設されている。

【００３０】一方、下側の機能キー３２０は、操作モードが入力モードである場合に漢字変換したり、また編集モードである場合に選択肢の中から所望のものを指定するためのキーを備えている。したがって、例えば入力キャラクタを漢字変換する場合には、変換キー３２６、カーソルキー３２７および選択キー３２８を適宜操作して行う。なお、シフトキー３２４は、キャラクタキー３１０や他の機能キー３２０と同時に押下することにより、キャラクタキー３１０の上側に記載された文字等を入力したり、機能キー３２０の上側に記載された機能を行わせるためのものである。また、符号３２５は、テープ印刷装置１の電源キーである。

【００３１】図４は、画像表示部８を示す拡大平面図である。画像表示部８は、入力されたキャラクタの画像等を表示する表示画面８１を備えている。この表示画面８１はモノクロ液晶ディスプレイで構成されており、前記画像等および後述する複数のインジケータ８５を液晶で表示する液晶表示部８２と、液晶表示部８２の周囲に設けられ、各インジケータ８５の示す意味を予め記載したモード記載部８３とにより構成されている。液晶表示部８２では、その大部分を占める表示部８４に、キャラクタ画像の他、その画像を印刷した場合のイメージ画像（印刷イメージ）、画像編集時のメニューおよび選択肢等も表示される。また、この液晶表示部８２では、印刷イメージを表示する場合、その画像を４階調で表示（４階調表示）できるようになっている。

【００３２】テープ印刷装置１では、キーボード３からの入力状態（ローマ字入力、仮名入力等）、印刷時のキャラクタ画像の書体（明朝体、ゴシック体等）、印刷スタイル（縦書き、定長印刷等）およびキャラクタ画像の

背景（無地カラー、装飾等）等（以下、「モード・スタイル」という）の設定について、使用時にどのようなモード・スタイルが設定されているのかを、インジケータ８５を点灯させることにより表示するようになっている。したがって、例えば入力状態がローマ字入力である場合には、「ローマ字」の直下に位置するインジケータ８５が点灯し、またキャラクタ画像の書体にゴシック体が指定されている場合には、「ゴシック体」の直下に位置するインジケータ８５が点灯する。

【００３３】次に、図５を参照して、テープ印刷装置１における制御系の基本的な構成について説明する。同図に示すように、テープ印刷装置１の制御は、キーボード３、位置検出センサ９８および識別センサ９９からの入力信号に基づき、上記回路基板１４に搭載された制御部２００が、駆動回路部２８０を介して、印刷部１２、テープ送り部１１、切断部１３および画像表示部８を制御している。

【００３４】制御部２００は、ＣＰＵ２１０、ＲＯＭ２２０、キャラクタジェネレータＲＯＭ（ＣＧ－ＲＯＭ）２３０、ＲＡＭ２４０、入力インターフェイス２５０および出力インターフェイス２６０を備え、これらが相互にバス２７０により接続されている。

【００３５】ＲＯＭ２２０は、ＣＰＵ２１０で処理する制御プログラム等の他、色変換テーブル２２１や文字修飾テーブル２２２などを記憶している。ＣＧ－ＲＯＭ２３０は、テープ印刷装置１に用意されている文字、記号、図形等のキャラクタのフォントデータを記憶していて、キャラクタを特定するコードデータが与えられたときに、対応するフォントデータを出力する。

【００３６】ＲＡＭ２４０は、各種レジスタ群２４１、キーボード３から入力されたキャラクタのテキストデータを記憶するテキストメモリ２４２、表示画面８１の表示画像データを記憶する表示画像データメモリ２４３、印刷画像データを記憶する印刷画像データメモリ２４４などの領域を有し、制御処理のための作業領域として使用される。なお、ＲＡＭ２４０は、電源がＯＦＦにされても、記憶したデータを保持しておくようにバックアップ回路（図示せず）によって電源の供給を受けるようになっている。

【００３７】入力インターフェイス２５０は、キーボード３、位置検出センサ９８および識別センサ９９等に接続し、キーボード３からの各種指令や入力データ、位置検出センサ９８からの位置検出信号、識別センサ９９からの識別情報信号などを、バス２７０に取り込むための回路である。また、出力インターフェイス２６０は、ＣＰＵ２１０等からバス２７０に出力されたデータや制御信号を、駆動回路部２８０に出力するための回路である。

【００３８】位置検出センサ９８は、印刷ヘッド１２１がホーム位置に達したことを検出し、識別センサ９９は、テープカートリッジ４やテープＴの種別および印刷開始位置を検出し、それぞれの検出信号を制御部２００に入力するようになっている。

【００３９】また、駆動回路部２８０は、ヘッド駆動回路２８１、モータ駆動回路２８２および液晶駆動回路２８３により構成されている。ヘッド駆動回路２８１は、制御部２００から出力される制御信号に従って、印刷部１２の印刷ヘッド１２１を駆動する。同様に、モータ駆動回路２８２は、制御部２００の指示に従って、印刷部１２のＣＲモータ１２２、テープ送り部１１のＰＦモータ１１１および切断部１３のカッターモータ１３１を駆動する。同様に、液晶駆動回路２８３は、制御部２００の指示に従って、画像表示部８を制御する。

【００４０】このように構成された制御系において、制御部２００のＣＰＵ２１０は、ＲＯＭ２２０内の制御プログラムに従って、入力インターフェイス２５０を介してキーボード３からの各種指令や各種データ、位置検出センサ９８からの位置検出信号、識別センサ９９からの識別情報信号などを入力し、ＣＧ－ＲＯＭ２３０からのフォントデータ、ＲＡＭ２４０内の各種データ等を処理し、出力インターフェイス２６０を介して駆動回路部２８０に制御信号を出力している。これにより、印刷制御や表示画面８１の表示制御等を行うとともに、印刷ヘッド１２１を制御して所定の印刷条件でテープＴにカラー印刷するなど、テープ印刷装置１全体を制御している。

【００４１】このテープ印刷装置１の場合、本発明の画像表示装置およびその装置を備えた電子機器並びに画像表示方法は、主に、画像表示部８、制御部２００およびキーボード３により実現されており、図６～図１４を参照して、以下にラベルを作成するまでの操作手順を示しつつ、その特徴となる動作を説明する。

【００４２】まず、電源をＯＮにして、テープ印刷装置１を起動させると、表示画面８１には、前回の起動時において電源をＯＦＦにした直前の状態の画像が表示される。すなわち、このテープ印刷装置１では、電源がＯＦＦにされても、ユーザが登録した種々の設定に加えて、前回の画像のデータが、その編集データ（モード・スタイルのデータも含む）とともにＲＡＭ２４０に記憶されるようになっており、その画像のデータおよび編集データに基づく画像が、起動直後の表示画面８１に表示される。なお、前回の起動時において、入力したキャラクタ等の画像を全て消去して電源をＯＦＦにしていたり、あるいはテープ印刷装置１を初めて使用する場合には、図６に示すように、印刷時の行を示す行頭マーク（行番号が四角で囲まれたマーク）のみが表示画面８１の表示部８４に表示される。

【００４３】ここで、図６に示す行頭マークのみが表示された場合に、「取扱注意」のキャラクタ列を入力し、このキャラクタ列に対し種々の編集を行い、その後印刷してラベルを作成するまでについて順を追って説明す

る。

【００４４】図７は、「取扱注意」のキャラクタ列を入力した直後の表示部８４を示す図である。同図に示すように、「取扱注意」のキャラクタ列を入力すると、表示部８４には、「取扱注意」のキャラクタ列に加えて、その上半部に、「取扱注意」の印刷イメージおよびそのラベルの長さ（以下、「テープ長」という）が表示される。

【００４５】この印刷イメージは、「取扱注意」のキャラクタ列のデータが、印刷イメージ用にＲＡＭ２４０で展開され、その制御信号が液晶駆動回路２８３に出力されることにより、表示部８４に表示されている。一方、テープ長は、「取扱注意」の各キャラクタの文字サイズ、キャラクタ数およびキャラクタ間距離を基に計算され、その値に前後余白を加えた値が表示されている。なお、テープ印刷装置１では、一定長さのラベルを作成するために（定長印刷）、ユーザが自らその長さを設定できるようにもなっており、この場合にはテープ長として、その設定した長さが表示される。

【００４６】上記のように「取扱注意」のキャラクタ列を入力した後、もちろん、このまま印刷してラベルを作成することも可能ではあるが、テープ印刷装置１では、入力したキャラクタに対し種々の編集を施すことが可能であり、これにより表現力の豊かなラベルを作成することができる。そこで以下では、編集の一例として、キャラクタの背景および文字色を設定する場合について説明する。

【００４７】操作モードが入力モードである状態（図７参照）において、背景を設定するための所定の機能キー３２０を適宜操作すると、操作モードは入力モードから背景編集モードに遷移し、表示部８４が背景の編集画面に切り替わって、図８に示す各種背景（以下、模様を有する背景を「装飾背景」という）が表示される。つまり、キーボード３からの背景編集の指令に基づき、ＣＰＵ２１０がＲＯＭ２２０から各種装飾背景を読み出し、これらを、液晶駆動回路２８３を介して表示画面８１の表示部８４に表示させている。

【００４８】図８に示すように、表示部８４の上部には、背景編集の表題（この場合「装飾背景」）が表示され、その下側に選択可能な複数（本実施形態の場合１画面に３つ）の装飾背景が表示される。具体的には、表示部８４の左半部には装飾背景の画像イメージが、右半部にはその名称（背景名）が、各装飾背景に予め割り振られた通し番号とともに表示される。なお、この通し番号は、予め提供されカラー印刷された装飾背景の一覧をもとに、ユーザの選択を容易ならしめるためのものである。

【００４９】図８に示すように、背景の編集画面では、背景名の一つが白黒反転しており（図８では「カラクサ」）、その背景が前回の起動時に設定されたものであることを示している。ここで、カーソルキー３２７を適宜操作して、所望の装飾背景の背景名にカーソル（白黒反転）を合わせた後、選択キー３２８を押下する。これにより、所望の装飾背景が、「取扱注意」のキャラクタ列の背景として設定される。なお、カーソルを「花ガラ」に合わせたところで、さらに下矢印（「↓」）のカーソルキー３２７を押下すると、装飾背景および背景名が順次上方にスクロールして、図外の装飾背景および背景名が表示部８４に表示される。

【００５０】この背景の編集では、図９に示す装飾背景（背景名：警告）を設定したとする。なお、この「警告」の装飾背景は、カラー印刷されると、全体が黄色で、左端の三角マークが黒色、かつ、その三角マーク内の「！」マークが白色で印刷される。

【００５１】背景の設定が完了すると、操作モードは背景編集モードから、再度入力モードに遷移し、表示部８４が図１０に示す画面に切り替わる。すなわち、印刷イメージが表示されている表示部８４の上半部には、「取扱注意」のキャラクタ列の印刷イメージとともに、その背景として、上記で設定した「警告」の装飾背景の印刷イメージが重ねて表示される。また、表示部８４の上半部の左端に、テープ長とともに背景名が表示される。なおこの場合、装飾背景が設定されていることを示すインジケータ８５（図４上側の左から２つ目）が点灯する。

【００５２】表示部８４では、「取扱注意」のキャラクタ列の印刷イメージおよび「警告」の装飾背景の印刷イメージは、いずれもそれぞれの印刷用データのうちカラーデータの階調に基づいて、その濃淡が表示されるようになっている。すなわち、表示部８４は、モノクロ液晶ディスプレイで構成されているため、印刷イメージの画像は、上記階調が淡色を表現する値である場合には、白または白に近い灰色で表示される一方、階調が濃色を表現する値である場合には、黒または黒に近い灰色で表示されるようになっている。したがって、仮に「取扱注意」のキャラクタ列および「警告」の装飾背景の印刷用データの階調が同一であって、しかもその階調で両印刷イメージを表示部８４に表示させる場合には、例えカラー印刷したときの「取扱注意」のキャラクタ列の文字色と、「警告」の装飾背景の色（背景色）とが相違するとしても、両印刷イメージは同一色（濃淡）で表示されてしまう。

【００５３】そこで、このテープ印刷装置１では、キャラクタの印刷イメージの階調を、表示部８４が表示し得る最濃色を表現する階調とするとともに、装飾背景の印刷イメージの階調をその他の階調として、両印刷イメージを表示部８４に表示している。具体的には、ＣＰＵ２１０がＲＡＭ２４０に記憶されている両印刷イメージの階調を、上記のように制御している。したがって、ＣＰＵ２１０およびＲＡＭ２４０などにより階調制御手段が構成されている。

【００５４】表示部８４におけるキャラクタの印刷イメージおよび装飾背景の印刷イメージの表示について更に詳述すると、この表示部８４は、上述したように、モノクロ４階調で印刷イメージを表示するように構成されている。したがって、キャラクタの印刷イメージについては、最濃色を表現する１階調で表示され、一方装飾背景の印刷イメージについては、他の３階調で表示される。

【００５５】このように印刷イメージを４階調で表示することにより、キャラクタおよび装飾背景の印刷イメージを極めて良好な状態で表示させることができる。すなわち、４階調を越えた階調によって印刷イメージを表示させると、キャラクタの印刷イメージの階調と、装飾背景の印刷イメージのうち、最も濃色を表現する階調とが、４階調表示の場合に比べて近似し、装飾背景に対するキャラクタの印刷イメージが識別し難くなるおそれがある。逆に、４階調より少ない階調、例えば３階調によって印刷イメージを表示させると、装飾背景の印刷イメージに使用し得る階調が２階調となり、装飾背景の模様として単純なものしか表示することができなくなってしまう。

【００５６】したがって、上記のように、キャラクタの印刷イメージの階調を最濃色を表現するものとするとともに、印刷イメージを４階調表示することにより、キャラクタの印刷イメージおよび装飾背景の印刷イメージを重ねて表示しても、両印刷イメージを容易かつ明確に識別することができ、しかも多少複雑な装飾背景も明確に識別することができる。また、テープ印刷装置１において、４階調表示のモノクロ液晶ディスプレイを使用することにより、装置全体の製造コスト上昇の抑制を図ることもできる。

【００５７】なお、キャラクタの印刷イメージの階調は、上記のように常に最濃色を表現する階調とすることに限定されるものではなく、キャラクタおよび装飾背景の両印刷イメージの階調が同一である場合に、両階調間に階調差が生ずるように、少なくとも一方の階調が変更されればよい。かかる場合であれば、キャラクタの印刷イメージと装飾背景の印刷イメージとを明確に識別可能である。またこの場合、キャラクタの印刷イメージの階調を装飾背景の印刷イメージの階調よりも相対的に濃色

を表現する階調にすることが好ましく、かかる場合には、キャラクタの印刷イメージをより一層明確に識別することができる。

【００５８】また、キャラクタの背景編集については、上記「警告」のような装飾背景を設定する他、所望の色（背景色）を選択して、無地の背景を設定することもできるようになっている。この場合、無地の背景が設定されていることを示す「無地カラー」のインジケータ８５（図４上側の左端）が点灯する。なお、設定した背景色と、後述する設定したキャラクタの文字色とが同一である場合には、印刷イメージの表示部分に、図１１に示すような警告通知が一時的に表示され、ユーザに注意を喚起するようになっている。

【００５９】次に、「取扱注意」のキャラクタ列の文字色を設定する場合について説明する。この場合も、上記背景の編集と同様に、適宜機能キー３２０を操作して、操作モードを入力モードから文字色編集モードに遷移させる。そうすると、表示部８４が文字色の編集画面に切り替わって、図１２に示す各種文字色が表示される。そして、カーソルキー３２７を適宜操作して、所望の文字色にカーソルを合わせるとともに、選択キー３２８を押下する。これにより、「取扱注意」のキャラクタ列の文字色が設定される。

【００６０】この文字色の編集では、「取扱注意」全体に対し赤色を設定したとする。この場合、「取扱注意」のキャラクタ列の階調と、上記「警告」の装飾背景の階調とが同一となったときであっても、上述したように、「取扱注意」の印刷イメージが最濃色を表現する階調で、「警告」の装飾背景の印刷イメージがその他の階調で表示される（図１０参照）。

【００６１】上記では、編集の一例として、キャラクタの背景および文字色を設定した場合について説明したが、テープ印刷装置１では、これら以外に多くの編集ができるようになっている。詳細な設定手順については省略するが、下記表１に、上記編集も含め、その他の編集のいくつかについて示す。

【００６２】

【表１】

13　　14

編　集	選択肢の具体例
文字色	赤色、青色、黄色、…
文字色濃度	－２、－１、±０、＋１、＋２
文字輪郭色	赤色、青色、黄色、…
背景名(背景色)	赤ﾁｪｯｸ、カラクサ、花がら、警告、…
背景濃度	－２、－１、±０、＋１、＋２
文字サイズ	１８、２４、３２、４８、６４、…(ドット)
文字フォント	明朝、ゴシック、…
文字飾り	影付、網掛、アンダーライン、…
文字体	正体、斜体、中抜き、…
文字伸縮	ふつう、伸び、縮み
外枠	丸枠、角枠、…
余白長	極小、小、大、極大
テープ長	１．０、～、４．０、～、５０(ｃｍ)

【００６３】なお、上記表１において、「選択肢の具体例」の欄に「…」が記載されている編集は、選択肢が記載されたもの以外にも存在することを示す。また、外枠の具体例には、「丸枠、角枠、…」が記載されているが、実際には、その外枠の形状が表示される（図１３（ｆ）、（ｇ）参照）。

【００６４】また、上記表１に示すように、編集には、画像自体に関する編集（表１の「文字色」～「外枠」）の他、印刷テープＴ１に画像を印刷する場合の印刷条件である前後の余白長や、作成されるラベルの長さ（テープ長）も含まれている。これらの印刷条件を設定する場合も、上記編集と同様に、表示部８４を編集画面に切り替えて行う。

【００６５】以上のようにして、入力したキャラクタに対し編集を行った後、直ちに印刷を行ってもよいが、このテープ印刷装置１では、印刷前に各編集について設定した編集内容を、簡単に確認することができるようになっている。すなわち、編集内容に基づく情報（印刷情報）を、表示画面８１の表示部８４に一括して表示させることができるようになっている。なお、この機能を、以下「プロパティ表示機能」という。

【００６６】プロパティ表示機能を実行する場合には、キーボード３の所定の機能キー３２０を押下する。そうすると、操作モードが、入力モードから印刷情報表示モードに遷移し、表示部８４が図１３（ａ）に示す画面に切り替わって、表示部８４に印刷情報が表示される。

【００６７】このプロパティ表示機能では、ＲＡＭ２４０に記憶された上記表１の各編集による印刷情報がＣＰＵ２１０に読み出され、液晶駆動回路２８３を介して表示部８４にスクロール可能に表示される。

【００６８】実際には、各印刷情報が３項目ずつ表示部８４に表示され、カーソルキー３２７を適宜操作することにより、図１３（ａ）～（ｇ）に示すように、印刷情報がスクロールして表示される。なお、表示部８４の右端には、上向きまたは下向きの三角マークが表示され、その向きのカーソルキー３２７を押下することにより、各印刷情報をスクロールさせて、他の印刷情報を表示させることができることを示している。

【００６９】また、印刷情報の表示は、上記のようにスクロール表示されるものに限定されるものではなく、所定の機能キー（カーソルキーなど）３２０を適宜操作することにより、表示部８４に表示される印刷情報ごとに印刷情報を切り替え表示するようにしてもよい。かかる場合には、所定の機能キーを１回押下するだけで、印刷情報の表示項目数（実施形態の場合は３）ごとに印刷情報が切り替わって表示されるため、ユーザは印刷前に印刷情報の全てを迅速に確認することができる。

【００７０】そして、印刷情報を確認した後、キーボード３の印刷キー３２１を押下することにより、上記で設定した編集を反映した印刷画像が、印刷テープＴ１に印刷され、その印刷部分にラミネートテープＴ２が貼着される。その後、テープＴの印刷部分がテープ排出口１０から外部へ排出され、切断部１３によって切断されて、図１４に示すようなラベルが完成する。なお、同図に示す「取扱注意」の文字は、影文字であり、その文字色および影色は、それぞれ赤色および黒色でカラー印刷される。また、背景全体は黄色で、三角マークおよび外枠は黒色で、さらに「！」マークは白色でカラー印刷される。

【００７１】以上説明したように、本実施形態によれば、カラー印刷可能な背景およびキャラクタについての印刷イメージの画像を相互に重ねて表示部８４に表示する場合であって、その表示部８４がモノクロ液晶ディスプレイで構成されていても、両画像の階調間に階調差が生ずるようにしているので、背景の印刷イメージに対しキャラクタの印刷イメージを容易、かつ、明確に識別することができる。また、表示部８４に印刷情報を一括して表示させるようにしているので、簡単な操作で、印刷情報の全てを容易に確認することができる。したがって、キャラクタ等の入力、編集から印刷までの作業を容易、かつ、迅速に行うことができ、しかも印刷される画像を印刷前に詳細にイメージすることができる。

15

【００７２】なお、実施形態では、本発明をテープ印刷装置に適用した場合について説明したが、ワープロなどにも適用できることはいうまでもない。

【００７３】

【発明の効果】以上説明したように、本発明によれば、カラー印刷可能なキャラクタ画像および背景画像を重ねて表示し、かつ、両画像をモノクロ表示する場合であっても、両画像の階調間に階調差が生ずるようにするため、キャラクタ画像と背景画像とを容易、かつ、明確に識別することができる。

【図面の簡単な説明】

【図１】本発明の一実施形態に係る印刷装置を適用したテープ印刷装置の外観斜視図である。

【図２】テープ印刷装置の装置本体の内部を示す断面構造図である。

【図３】キーボードのキー配置図である。

【図４】画像表示部を示す拡大平面図である。

【図５】テープ印刷装置の制御系を示すブロック図である。

【図６】テープ印刷装置における表示部の初期画面を説明する説明図である。

【図７】キャラクタ入力した場合の表示部を示す図である。

【図８】背景を設定する場合の編集画面を示す図である。

【図９】背景名「警告」の背景（装飾背景）を示す図である。

【図１０】背景指定後の表示部を示す図である。

【図１１】警告通知をした場合の表示部を説明する説明図である。

16

【図１２】文字色を設定する場合の編集画面を示す図である。

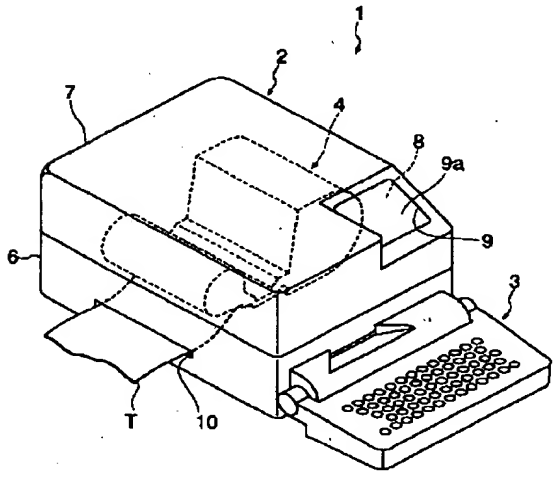
【図１３】印刷情報を表示部にスクロール表示させた場合を示す図である。

【図１４】印刷（カラー印刷）されたラベルを示す図である。

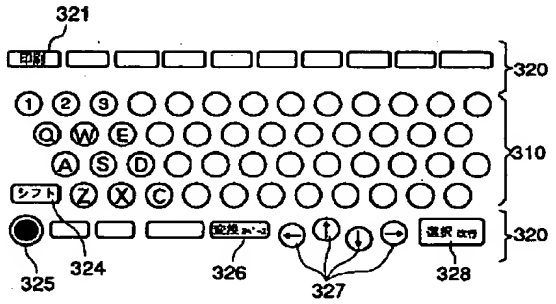
【符号の説明】

１	テープ印刷装置
２	装置本体
３	キーボード
４	テープカートリッジ
５	インクカートリッジ
８	画像表示部
１１	テープ送り部
１２	印刷部
８１	表示画面
８２	液晶表示部
８４	表示部
１２１	印刷ヘッド
２００	制御部
２１０	ＣＰＵ
２２０	ＲＯＭ
２４０	ＲＡＭ
２８０	駆動回路部
２８３	液晶駆動回路
Ｔ	テープ
Ｔ１	印刷テープ
Ｔ２	ラミネートテープ

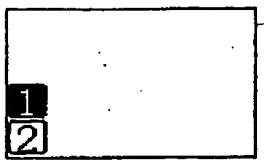
【図１】



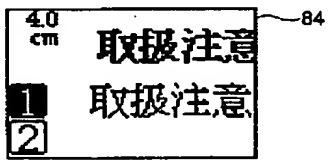
【図３】



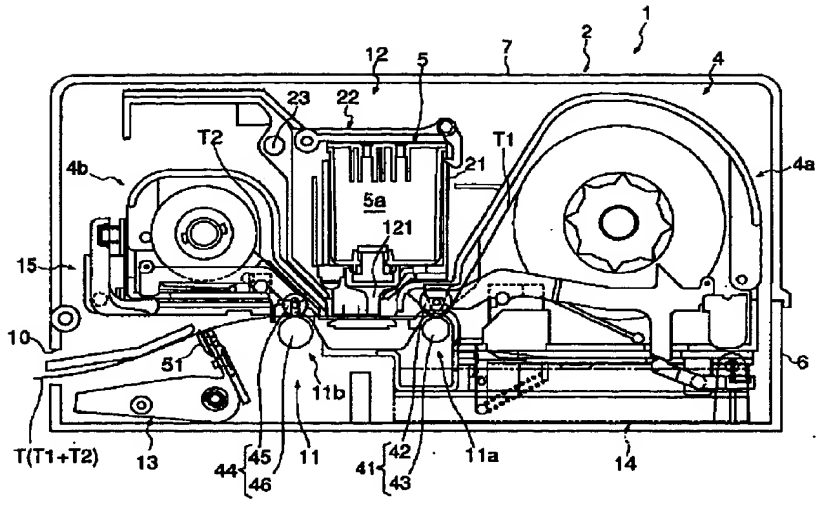
【図６】



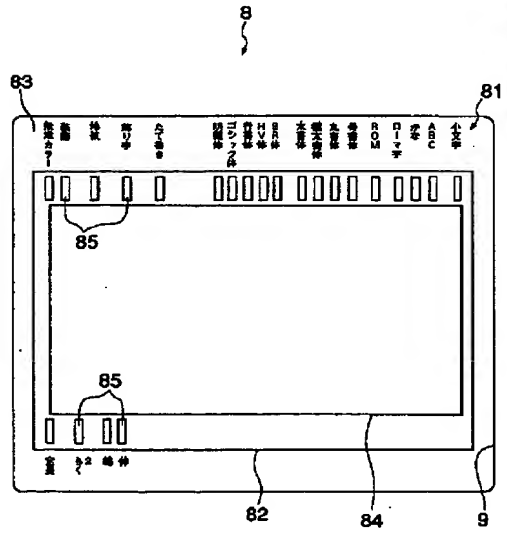
【図７】



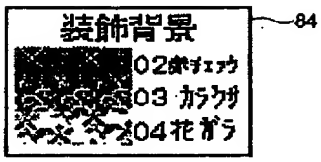
【図２】



【図４】

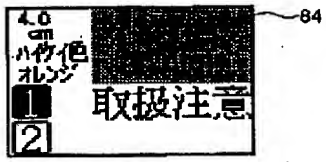


【図８】

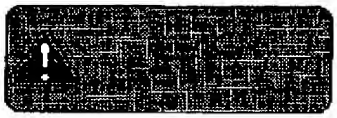


【図１０】

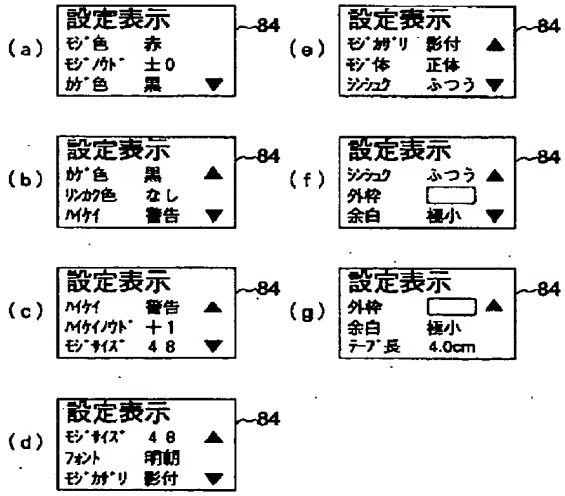
【図１１】



【図９】

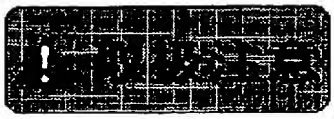


【図１３】

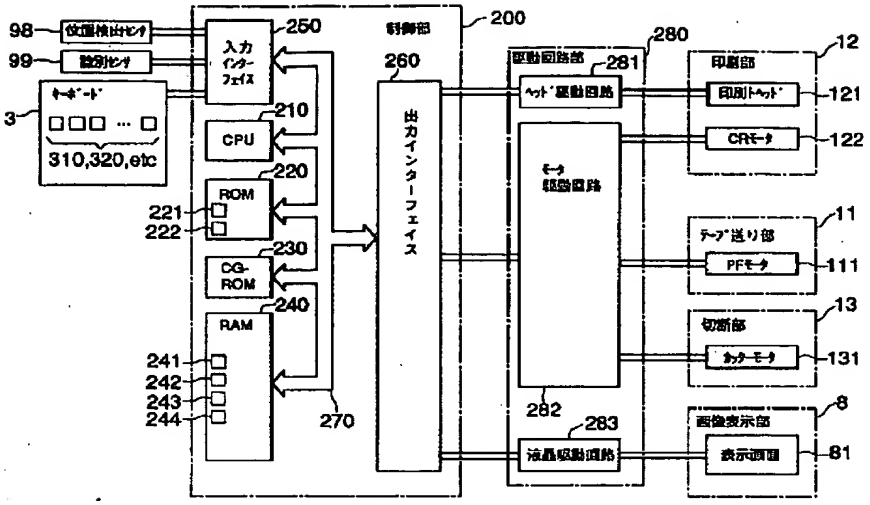


【図１２】

【図１４】



【図５】


98
99
3
310,320,etc
入力インターフェイス
250
制御部
200
CPU
210
ROM
220
221
222
CG-ROM
230
RAM
240
241
242
243
244
270
出力インターフェイス
260
駆動回路部
280
281
282
283
印刷部
12
121
122
11
111
13
131
8
81